

Cuban Sugar  
Industry

          
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The History and Present Status  
of the Cuban Sugar Industry

Subject of Report

Date May 15, 1926

Course Master's Thesis

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Original







THE HISTORY AND PRESENT STATUS

OF THE

CUBAN SUGAR INDUSTRY

Oscar S. Nelson

Oscar S. Nelson,  
Master's Thesis  
May, 1926.

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## THE HISTORY AND PRESENT STATUS OF THE CUBAN SUGAR INDUSTRY

### INTRODUCTION

The tremendous increase in the price of sugar in 1920 increased public interest in this industry. Government control and charges of profiteering had previously resulted in numerous investigations by the Tariff and Federal trade commissions. This increased interest in the sugar industry on the part of the public and the government is due to the increased importance of sugar as a staple food. It now constitutes the source of over 13% of all the energy obtained from food by the people of the United States and the per capita consumption has passed 100 pounds yearly.\* Sugar is obtained from two sources, the sugar cane and the beet-root. The sugar cane is primarily a tropical plant and requires a moist, hot climate, while the beet root is a temperate zone plant and requires a cool, dry air climate. Both plants require an abundance of sunshine and moisture during the period of growth, since sugar is formed by the action of sunshine on air and water. Cane sugar makes up 69% of the world's supply and ~~one-third~~ <sup>one-third</sup> of this is furnished by Cuba.

The present study has been undertaken with the object of discovering the factors responsible for the rise of ~~and~~ <sup>and</sup> present status of the most important single source of sugar, Cuba. The subject has been divided

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\* Bibliography No. 8 (1923)







into three parts, the historical development of, the present importance of, and the factors governing the industry. In the historical development the early history of sugar and the factors involved in its westward spread to Cuba, the effect of beet sugar competition, and the rapid growth following the establishment of the Cuban Republic will be considered. The present importance of Cuba will be discussed with respect to the changes brought about by the World War, the centers of production, the channels of trade and the markets for sugar. In the final section of the study the factors involved will be divided into five groups, the geographic factors, the short haul to market, the labor and population situation, capital and science in the industry and the United States in its relation to Cuba.

A digest of the conclusions reached may aid the reader in determining as he proceeds whether they are based on sound reasoning from the facts found. Briefly they are as follows:

1. That the rise of Cuba to importance as a sugar producer has been most significant during the last ten years.
2. That the doubling of average yearly production during the war and post-war period has marked Cuba as the most important potential source of sugar in the world.
3. That fluctuations in the price of sugar are apt to result from the fact that the demand for sugar is somewhat inelastic, while the supply of sugar varies because of changes in climatic conditions.
4. That technical progress in the cane sugar industry of Cuba has been along mechanical rather than agricultural lines.
5. That the labor shortage in Cuba is being solved in part by increasing capital investment, increased immigration and an increasing ~~degree of~~ ~~civilization~~ population.
6. That the most important factor in the development and present status of the Cuban sugar industry is its dependence upon the United States, due largely to the ~~proximity~~ <sup>advantage</sup> of geographical location.
7. That the future of the Cuban sugar industry depends somewhat upon uncertain factors, such as the tariff, the demand for sugar and the recovery of the European beet sugar producers.







## CHAPTER I

### HISTORICAL DEVELOPMENT OF THE SUGAR INDUSTRY OF CUBA

#### A. THE SUGAR INDUSTRY PRIOR TO 1800 \*

ORIGIN AND WESTWARD SPREAD OF SUGAR CANE - Cane sugar originated in India and its use spread westward by easy stages until it became the most important product of Cuba.

For several hundred years, however, its utility was known only in India, the natives then, as now, sucked the juice out of the so-called "Honey Bearing Reed". Bengalese discovered the art of making sugar in the third or fourth century A.D. From India the sugar cane was carried westward into Persia, Arabia, Egypt and Spain. During the Middle Ages sugar was in great demand, and a lively trade sprung up in the Mediterranean basin with Venice as the center. The Turks destroyed this early industry in the fifteenth century and the cultivation of cane was taken up in Maderia, the Cape Verde Islands and the Azores. Later the mild, moist climate and negro labor in the Canary Islands enabled the Spaniards to lower the price of sugar and capture the market only to lose it again to the more favorably situated American colonies.

EARLY STRUGGLE OF CUBA TO DEVELOP HER SUGAR INDUSTRY - Brazil early became important as a sugar producing country. In Bahia and Pernambuco there were over a hundred mills by 1590. The Dutch were responsible for the growth of this industry and as soon as they were expelled by the Portuguese it declined.

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\* Bibliography No. 3.







Haiti began producing sugar in 1515, and under the direction of the French expanded the industry rapidly from 1697 to 1791. French cruelties, however, provoked a revolution in the latter year, and the sugar industry came to an end because the negroes lacked<sup>the</sup> ability and enterprise<sup>necessary to maintain a stable government.</sup> In the meantime a shortage of labor and restrictions in the form of monopolies and special privileges imposed by Spain kept down the sugar industry of Cuba. In 1772, however, these restrictions were removed and, aided by the ruin of the sugar industry of Haiti, production of sugar in Cuba increased rapidly. As a result the exports of sugar from Cuba reached 40,800 tons for the year 1802 as compared with 4,400 for the year 1760, 12,000 for the year 1780, 14,000 for the year 1790, 14,600 for the year 1792, and 24,000 for the year 1796.\* In ten years the number of factories increased from 473 to 870. Cuba was, however, still of minor importance as a sugar producing country. The following statistics, although somewhat incomplete and unreliable, give some indication of the relation of Cuba to the rest of the world in the sugar industry.\*

Exportation of American colonies and countries:

French Colonies (1788) . . . . .	93,045 tons
English Colonies (1781 to 1785 yearly average) . . . . .	78,029 "
Danish Colonies (1768) . . . . .	20,550 "
Cuba (1790) . . . . .	13,993 "
Brazil (1796) . . . . .	34,276 "
Dutch Colonies (1785) . . . . .	8,892 "

In addition to the above, sugar was being produced in Mauritius and Reunion, in India, Formosa, and Java. The American sugar industry, however, had supplanted that of Maderia, the Cape Verde Islands and the Canary Islands and had become quite firmly established. The latter part of the eighteenth

\* The World's Cane Sugar Industry, H.C.Prinsen Geerlign.





and the first part of the nineteenth centuries was not a prosperous period for the sugar industry as a whole. France and her allies were at war with Great Britain. A great deal of the naval fighting between them took place in West Indian waters. Many merchant ships were captured or destroyed. In other sections of the world also, ships laden with sugar fell prey to the warring nations. The losses sustained by sugar planters were not confined to the type mentioned above, for in addition the chief market for their sugar, Europe, became inaccessible due to the operation of the "Continental System" of Napoleon.

B. EFFECTS OF THE RISING COMPETITION OF BEET SUGAR AND THE  
ABOLITION OF SLAVERY DURING THE NINETEENTH CENTURY \*

EARLY DEVELOPMENT OF BEET SUGAR NOT SERIOUS TO CUBAN INDUSTRY - When sugar imports into Europe began to decline in response to the effect of the "Continental System", prices rose radically and furnished an incentive to the development of a substitute for cane sugar. Just at this time the first beet sugar factory was established in Breslau, Silesia by the King of Prussia, Achard, who had extracted sugar from the beet root as early as 1747, now began to experiment on a large scale. In France attempts were made to produce sugar from grapes on a commercial scale, but, due to the success of the Germans, the beet won out and Napoleon established schools for instruction in sugar culture, ordered land planted with beet roots, and stopped the importation of sugar from the East and West Indies. By 1812, 334 factories were producing 7,000,000 pounds of sugar annually in France alone, while by the end of 1813 Germany and Austria were also able to supply their own needs. The beet sugar





industry had found itself, but immediately declined following the defeat of Napoleon. Cane sugar was again imported and the price of it in Europe fell, driving out of business the high cost beet sugar producers and leaving only 100 factories in France, who produced an average of 1,000 tons yearly from 1816 to 1821. In order to protect the beet sugar industry, France levied duties on cane sugar and granted an export premium on sugar produced from beets. Under this stimulus sugar factories were reopened and <sup>new</sup> ones built, and beet sugar began to compete in the foreign market. Germany and Austria also made progress. Chemists in Germany succeeded in raising the beet sugar yield from  $5\frac{1}{2}\%$  to  $7\frac{1}{4}\%$ .

By the middle of the nineteenth century beet sugar costs of production had been lowered enough to make it a serious competitor of cane sugar. There is no evidence, however, that it had had any appreciable effect on the cane sugar <sup>industry of Cuba. Other</sup> factors were more important to Cuba. Great Britain abolished slave trading in 1807 and freed all slaves in 1834, causing the cane sugar industry to shift to Spanish, Portuguese and French possessions, where an abundance of cheap labor was still obtainable. Cuba, because of her abundant, fertile land resources, was especially well equipped to take advantage of this change and experienced greater prosperity than at any time up to the beginning of the twentieth century. New areas were planted with cane and several fishing ports developed into sugar concentration points. It is important to note that the expansion of the Cuban sugar industry during the second quarter of the nineteenth century occurred while the beet sugar industry was making a strong bid for world markets and while Spain was exacting high taxes, export duties, and special levies of her colonies. Low production costs and an available market enabled Cuba to compete with Europe and other





centers at this time in spite of the above handicaps. A shortage of cheap labor and internal disturbances eventually brought an end to Cuba's prosperity during the second half of the century, however, when slavery declined and was abolished thruout the West Indies.

THE TRANSITION FROM SLAVE TO FREE LABOR IN CUBA \* The transition from slave labor to free labor in the cane sugar producing centers was perhaps the most revolutionary change that the cane sugar industry was forced to undergo. Slavery was the dominant factor in the early sugar industry and its abolition brought many of the producing colonies to the verge of ruin. As has already been seen, the British colonies were the first to undergo this change. The advantage gained by Cuba and other non-British colonies and the decline in sugar production in the British colonies as a result of the abolition of slavery in the latter has been pointed out. The beet sugar industry, the artificial extension of which coincided with the period of transition from slave to free labor, gained so much during this period that the last half of the nineteenth century was a very unprofitable period for the cane sugar producers. Furthermore, the American sugar producing centers lost a considerable portion of their market to the cane sugar producers in Asia and Australia, who had never been forced to depend upon slave labor. As the production in America decreased the production of beet sugar and Asiatic and Australian cane sugar increased to fill the gap.

Cuba was the last of the islands of the West Indies in which slavery was abolished. The British colonies were first in 1834, the French colonies followed in 1848, and the Dutch colonies in 1863. In 1873 slavery was abolished in Porto Rico, in 1876 it was abolished in St. Thomas. Cuba continued to have slavery until 1880. The transition from slave to free labor in Cuba covered a period of nearly forty

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\*Bibliography No. 6.





years, however, and was brought about with less disturbance than in the colonies of the other nations. The number of slaves in Cuba reached its highest point in 1841 with 436,495 or 74.1% of the total colored population. This high point was reached after a period of rapid increase from the time the slave trade in the British colonies was abolished. As previously indicated the Cuban slave trade flourished during the period from 1804 to 1841 and the sugar industry profited as a result because cheap labor lowered production costs in that industry so much that Cuba was able to undersell other colonies. From 1841 to 1880 both the number of slaves and the proportion of slaves to the total colored population decreased. The effects of this decrease on the Cuban sugar industry will be considered in its turn. Following 1850 sugar production in Cuba increased rapidly for five years, except during 1851 when an uprising of the Cubans marked the beginning of armed rebellion against Spain and reduced the sugar output for that year. The production in 1850 was only 223,000 tons while that in 1855 was 392,000 tons. The increase at this time was due primarily to a growing demand for sugar in the United States. An unprecedented expansion in the trade between Cuba and the United States followed the year 1854. A financial crisis in 1857 reduced trade and production temporarily, but Cuba was quick to recover and produced a bumper crop of sugar in 1859 amounting to 536,000 tons or over twice as much as was produced in 1850. The beginning of the Civil War in the United States cut into the sugar industry again, but by 1864 and 1865 Cuba had again surpassed any previous production records with crops amounting to 575,000 tons and 620,000 tons respectively.\* The trade of Cuba with the United States had also recovered rapidly and in 1864 amounted to more than a tenth of the total foreign

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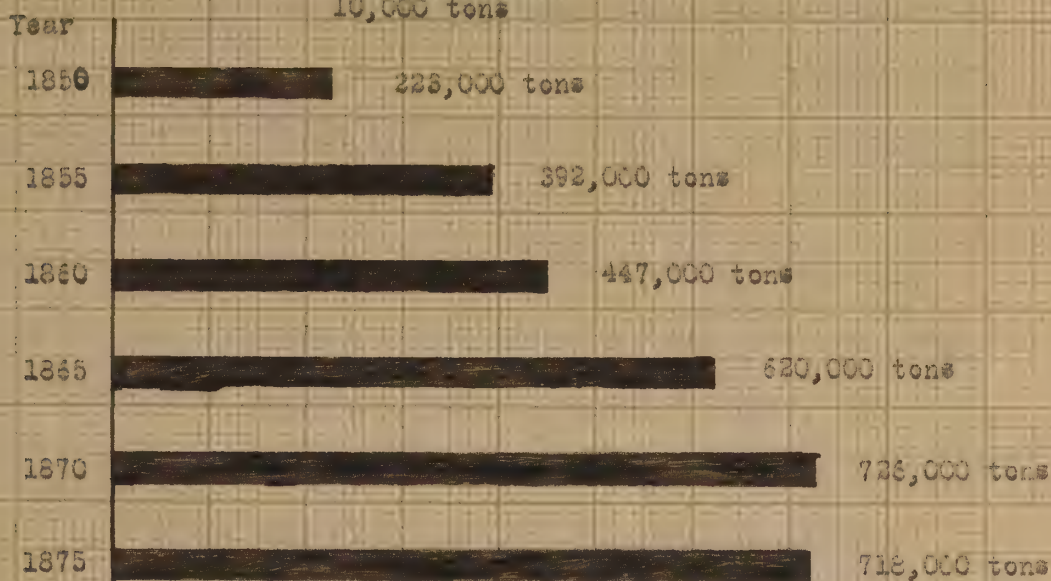
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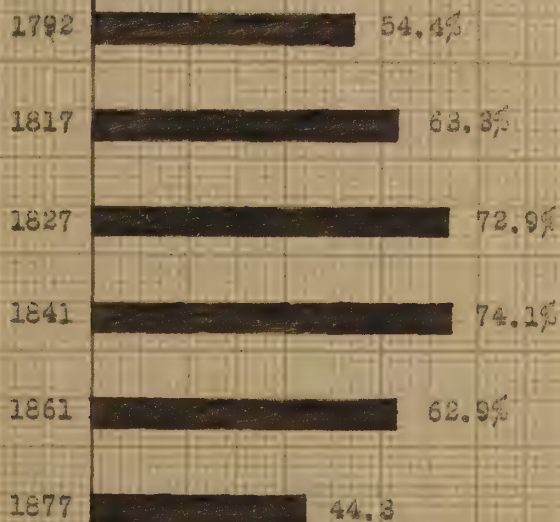
SUGAR PRODUCTION IN CUBA

Small square equals  
10,000 tons



Republica de Cuba,  
Secretaria de Agricultura, Comercio y Trabajo.

PROPORTION OF SLAVES TO TOTAL COLORED  
POPULATION IN CUBA



Census of the Republic of Cuba, 1919





trade of the United States, the highest percentage ever reached. The effect of the decrease in the number of slaves in Cuba on her sugar industry following 1841 is difficult to determine. In spite of the growing scarcity of labor the production of sugar increased. Perhaps the growing importance of the United States in the affairs of Cuba acted as a counter factor and was responsible for the above fact. At any rate, the growing demand for sugar in the United States and the increasing trade of this country with Cuba exerted a great influence on the sugar industry. The following quotation tends to emphasize this point:

\*The material development of Cuba . . . . is chiefly due to its proximity to the United States. From the latter she has acquired the impulse to act, and the fever of enterprise. She has obtained at a small cost, on account of the nearness of the coasts, the numberless mechanical implements to reduce the laborers in the manufacturies of sugar, and to convey it quickly to the coast . . . . Without that market of thirty millions of people, Cuba's production would have remained wretchedly small . . . Her well-being is not altered through Spain's disturbances, but by the pecuniary circumstances of Anglo-American merchants. . . . .\*\*

Although the number of slaves in Cuba was being reduced gradually because of the restriction of the slave trade, which ~~restriction~~ was fairly effective except during the governorship of General Canedo in 1852 when a scandalous increase of slave smuggling took place, the greatest reduction that took place prior to the passage of the abolition law in 1880 occurred after 1868. In that year all negroes born in the Spanish dominions after September seventeenth were declared free. This was followed in 1870 by the Moret law declaring all children born of slave

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\* Spain and Cuba: The Geneva Pamphlet on the Relations Between Spain and Cuba, New York, 1876. P. 36.





mothers after July sixth to be free. In addition all those who had served in the Spanish Army, all those who had reached the age of sixty years and all slaves belonging to the state were freed. The number of slaves was reduced from 363,288 in 1870 to 199,000 in 1876. An insurrection had broken out in 1869 and additional legislation on the slavery question was deferred. This uprising was a very severe blow to the now prosperous sugar industry. Fomented by Cubans residing in Cuba and abetted by Cubans residing in the United States, this insurrection began in the Eastern end of the island and spread westward. It was carried on by guerrilla warfare and resulted in a great deal of destruction of property, especially sugar plantations. A hurricane added to the reduction of the sugar crop in 1871, bringing the production of that year to a lower figure than at any time since the Civil War. The revolutionists did not have very much success during the first half of this so-called "Ten Years War", and did not capture a single port. The trade of Cuba with the United States was interfered with somewhat and some American lives and property were destroyed, but in spite of this the total foreign commerce of Cuba increased during the insurrection and that with the United States reached in 1874 the next to the highest ever attained during the Spanish ascendancy. In 1873 a panic and depression cut down the volume of sugar production as well as the foreign trade of Cuba. Between 1875 and the end of the insurrection in 1878 the production of sugar in Cuba declined nearly a third due to the prolongation of the rebellion and the growing scarcity and inefficiency of labor accompanied by a sharp decline in the price of sugar. The end of the war in Cuba was followed by an increase in the production of sugar from 533,000 tons during the season ended in 1878 to 670,000 during the season ended in 1879. But





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the following year witnessed a decrease in the production of sugar, due in part to the reaction following the total abolition of slavery in February 13, 1880.

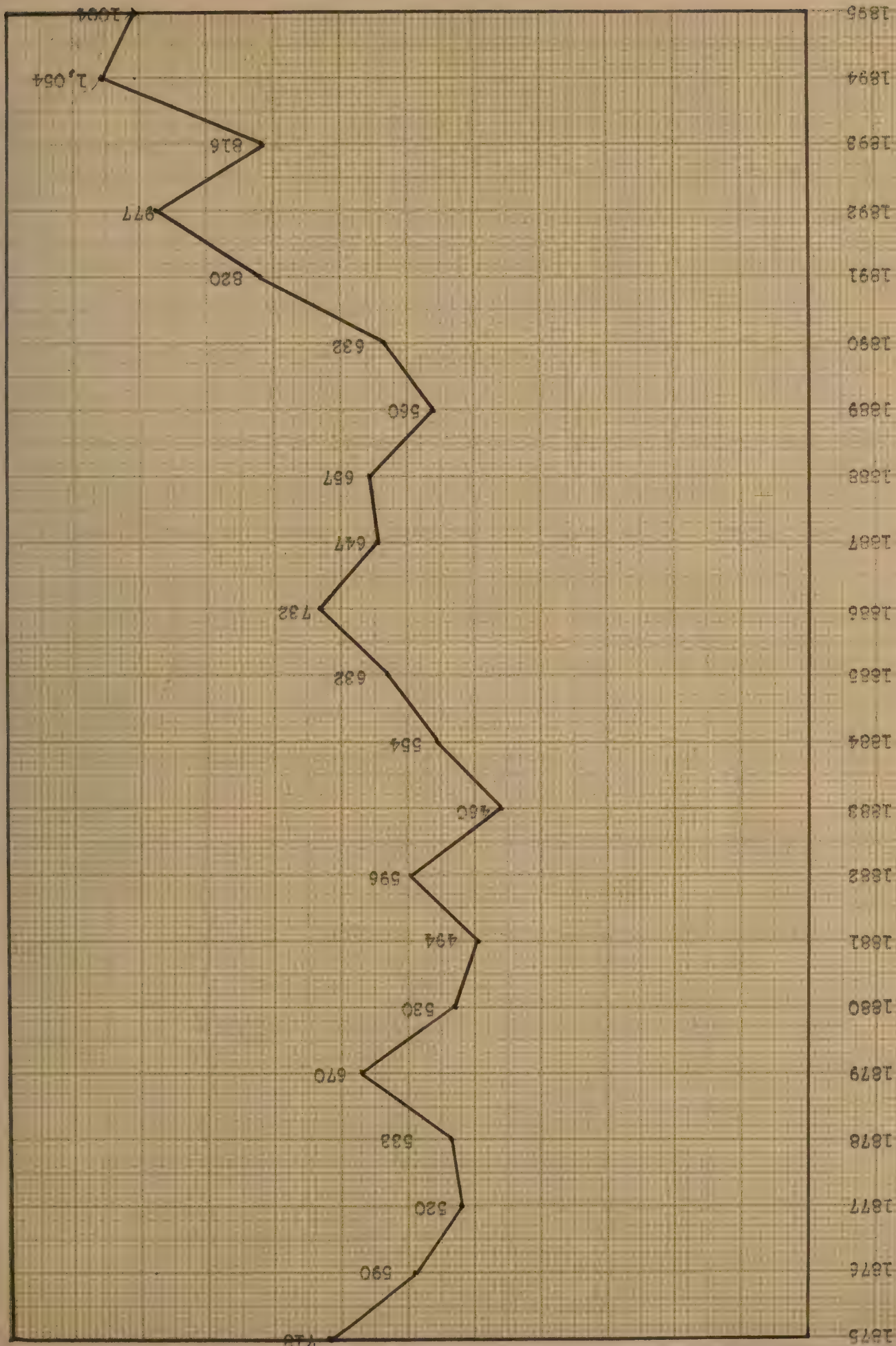
While no revolts or outbreaks accompanied the emancipation of slavery in Cuba as it had in colonies of the French and Dutch, yet the freedmen generally abandoned the plantations and reverted to a state of indolence or savagery. They became much less efficient as laborers. Wages did not rise immediately, since many plantations suspended operations, thus reducing the demand for laborers. In addition, the supply of labor was increased by immigration, natural increase of the population and the releasing of Spanish soldiers. Later on, however, wages rose to such an extent that serious embarrassment to the sugar industry resulted. Property values declined in Cuba because of the increasing costs of production and the low price of sugar, and credit was more difficult to obtain. The freedmen settled on small farms, where it was easy to secure a living because of the prolificacy of nature, and became a source of desultory labor. The fact that the necessities of life were easy of attainment became an unstabilizing factor in Cuba's labor supply following the emancipation of the slaves. With a small piece of land to supply most of his wants, the farmer worked only when necessity demanded and when he did work he would not go far from his home. This latter fact produced immobility of labor in the island. The plantation owners gradually came to count upon transient and immigration labor because of its greater dependence and mobility. To some extent the freedman in Cuba became a "colono" who rented land from the planter and sold his sugar cane to the planter's mill.

Despite the fact that the number of laborers dwindled,





SUGAR PRODUCTION OF CUBA (In thousands of long tons)  
 From: Direction de Commerce et Industrie - Negociado de Estadística Industrial Azucarera  
 HAVANA







the production of sugar in Cuba did not decline all at once. It remained fairly stationary for a time, due perhaps to the fact that cane when once planted continues to yield for several years. Following 1880, when the production of sugar in Cuba amounted to 530,000 tons, except for the year 1883 when internal disturbances reduced the production, there was a slight increase in production each year <sup>to</sup> 631,967 tons in 1885 and then a gradual decline to 560,333 tons in 1889. Various means were tried to overcome the labor shortage. Laborers were imported, plantations in some cases were cut into small sections and some plantations ceased to produce. All of the methods tried were very expensive and the sugar industry suffered severely during the period in which attempts to become adjusted to the limited source of labor were being made. This condition was not limited to Cuba, but existed throughout the American sugar producing district. As a result the production of cane sugar ceased increasing for a time and then began to decline. In the meantime the beet sugar industry was being artificially stimulated so that it was ready to fill the gap caused by the decline in cane sugar production.

#### EXPORT BOUNTIES ON BEET SUGAR AND THE EFFECT ON THE CUBAN CANE SUGAR INDUSTRY -

The effect of the abolition of slavery on the cane sugar industry as a whole and on the Cuban industry in particular has been pointed out. The effect of the abolition of slavery on the beet sugar industry is difficult to estimate in view of the fact that artificial factors were operating to increase the production of beet sugar during this period. Up to about 1870 the beet sugar produced in Europe was practically all consumed in continental European countries. Although the production of beet sugar had been on the increase since about 1830,



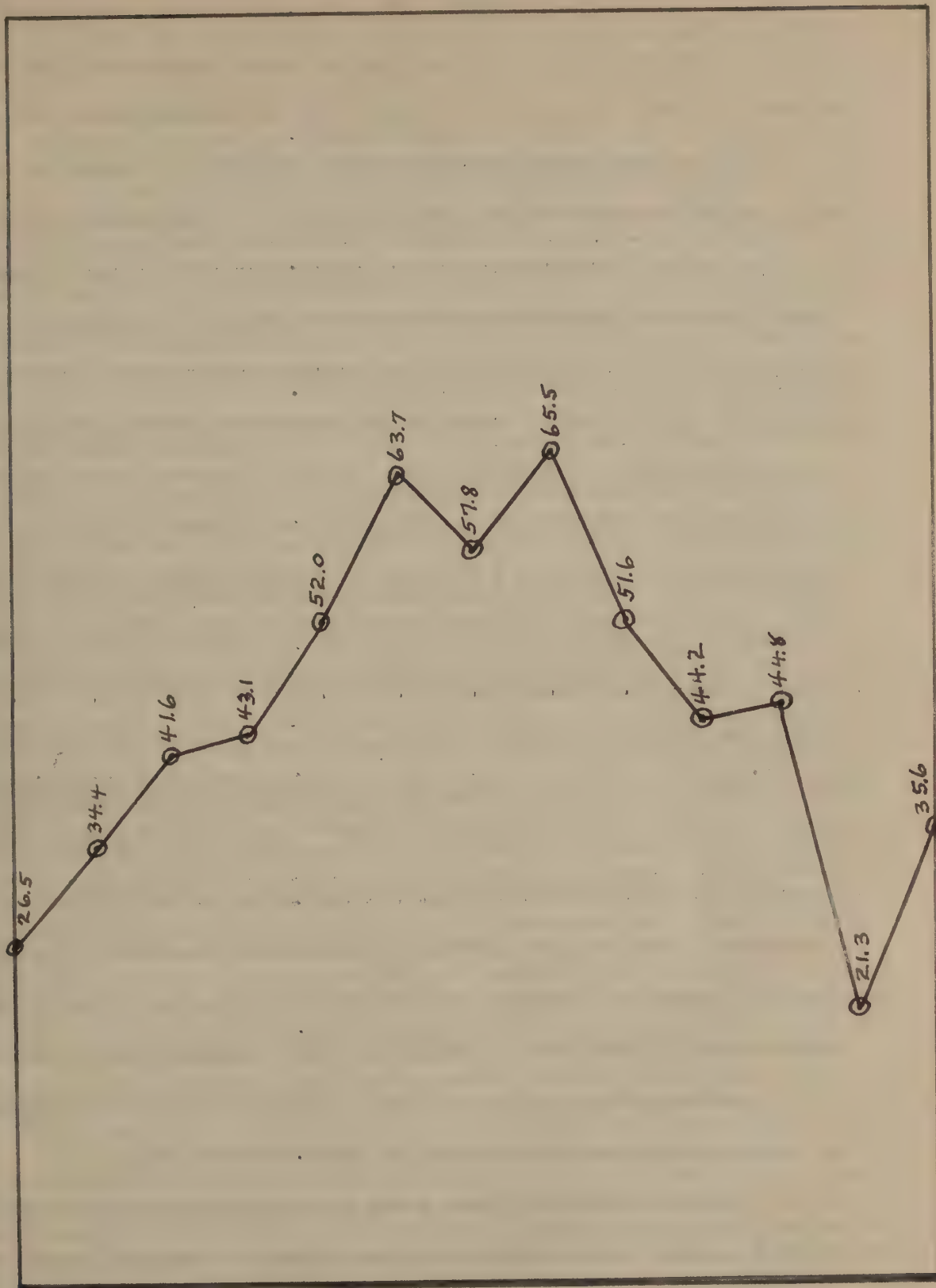


PER CENT OF WORLD SUGAR PRODUCTION MADE UP  
OF BEET SUGAR

LEFAX FILING INDEX

Per  
Cent  
100

90  
80  
70  
60  
50  
40  
30  
20  
10  
0



1865

1870

1875

1880

1885

1890

1895

1900

1905

1910

1915

1920

1925

Sources:

Encyclopedia Britannica, 11th Edition, Vol.26, p 46.

Yearbook, Dept. of Agriculture, 1923.

Sugar in Relation to the Tariff, Wright.





the cane sugar industry did not suffer materially from its competition except in the European market until the beet sugar producing countries began to produce more sugar than could be consumed at home. The exportation of sugar from Germany increased rapidly from 1875 to 1885. During the second half of the nineteenth century France also had a considerable export trade up to 1880, when a considerable amount was imported from Germany. Austria too exported sugar during the period under discussion. All of the countries mentioned supported their respective beet sugar industries by imposing high import taxes on sugar from foreign countries and their own colonies. This protection permitted the beet sugar industry to develop until production costs were materially lowered. By the time the European countries were in a position to export sugar, a system of export bounties had grown up which permitted the selling of beet sugar in England at a price that was sometimes below cost. In response to the bounties on sugar, production in the continental countries increased very materially, swelling the proportion of beet sugar to total sugar produced in the world. While in 1865 beet sugar made up only 27.2% of the world's supply of sugar, by 1890 this proportion had increased to 63.7%. Of course, the abolition of slavery and the lack of enterprise among the cane sugar producers as well as the bounty system of Europe contributed to this change. The proportion of beet sugar to total sugar produced declined following the abolition of the bounty system.

The sugar industry of Cuba was perhaps less affected by the bounty system in Europe than other cane producing centers. In the first place Cuba was furnishing the United States with between a third and a half of her supply of sugar and the lower freight rate between Cuba and the United States, offset to a certain extent the advantage given by



the bounty system. In the second place, the costs of production under normal conditions in Cuba were so much lower than those in Europe that the bounty system was not enough of an advantage to compete with Cuba. Unfortunately for Cuba, her costs were very materially increased because of the abolition of slavery and the "Ten Year's War", so that failure to make any marked progress from 1868 to 1894 can be ascribed to them. Although the shortage of labor in Cuba was a great drawback to the increased production of sugar, it was partly overcome by the investment of American capital. From 1879 to 1896 it is estimated that thirty to fifty million dollars was invested in Cuban industry by Americans. This capital was used to build machinery and railroads and to extend plantations. Except for the year 1893, the sugar production of Cuba increased gradually from 1889 to 1895. This increase took place despite the shortage of labor and the competition of the beet sugar and was, no doubt, in response to the increased use of capital equipment in Cuba, and to the reciprocity between the United States and Cuba, which became partly effective in 1891 and fully operative in 1892. Under this agreement sugar was admitted into the United States free of duty. The Cuban sugar crop reached a maximum in 1894 of 1,054,214 tons and was only slightly less the following year. Political instability, however, brought an end to this short period of prosperity in Cuba as it had done several times previously, and emphasized the need for a strong government if the Cuban sugar industry was ever to experience steady and permanent growth.

It can be seen from the foregoing discussion that the bounty system and the progress of the beet sugar industry were minor factors in the Cuban sugar situation thruout the nineteenth century, and that the labor





shortage arising out of the abolition of slavery, although quite serious for a time, was gradually overcome by the increased use of capital equipment and the introduction of the "colono" system.

C. THE ESTABLISHMENT OF THE CUBAN REPUBLIC  
AND ITS EFFECT ON THE SUGAR INDUSTRY \*

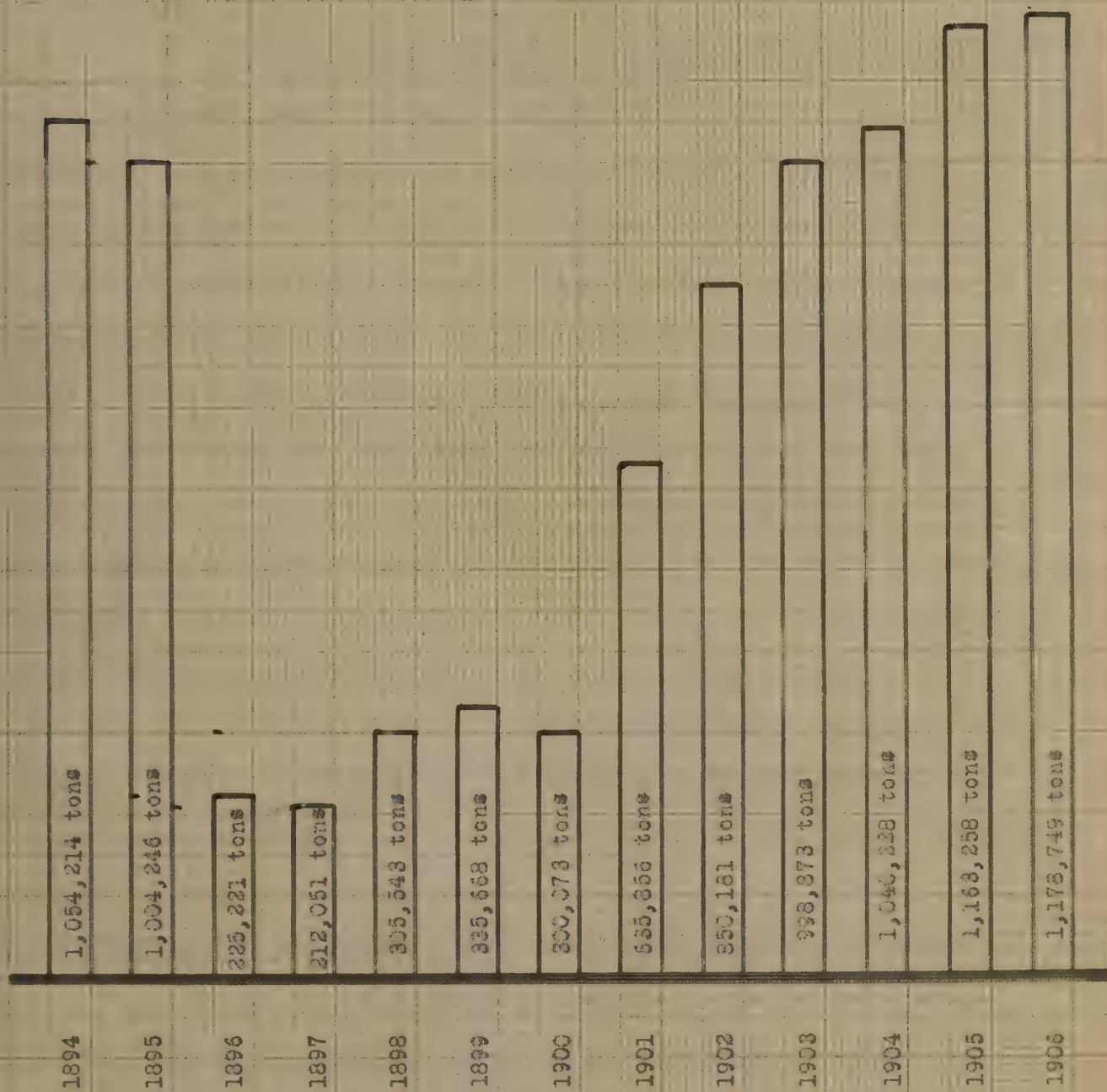
CAUSES AND RESULTS OF THE WAR WITH SPAIN - The insurrection which broke out in Cuba in 1895 and ended the short period of expansion of the sugar industry, was followed by war between the United States and Spain in 1898 and ended in the establishment of the Cuban Republic. Several causes have been ascribed to the insurrection of 1895. The panic of 1893 and a slump in foreign trade had aggravated economic distress in Cuba. Abrogation of reciprocity with the United States by Spain in 1894 and the competition of United States sugar producers made conditions worse. Great numbers of Cuban plantation workers were thrown out of work. As in the previous insurrection in Cuba in 1868, Cubans in Cuba fomented it, and they were aided by Cubans in the United States. Guerrilla warfare was again in vogue and much property was destroyed by both sides in order to destroy each other's means of livelihood. Cattle and sugar property were especially singled out for destruction. This was the worst period of disturbance in the history of Cuba. It became almost impossible to carry on the sugar industry in spite of the strict regulations of the Spanish authorities to continue production as long as it was possible to do so. Production dropped off immediately and reached the low point of 212,051 tons in 1897. Since the policy of the insurgents was to destroy all the sugar refining machinery and cane fields possible, the Americans, who not

\*Bibliography 3 and 11.





CUBAN SUGAR PRODUCTION DURING AND  
FOLLOWING THE WAR WITH SPAIN \*



\*Bibliography No. 4.



only had invested about 50,000,000 in capital equipment in Cuba, but who also had made advances of about \$15,000,000 in anticipation of the sugar crop of 1896, stood to lose considerable. How much this had to do with the entrance of the United States into the war in 1898 it is difficult to estimate.

Just as the rest period following the "Ten Year's War" with Spain saw remarkable changes in the methods of conducting the sugar industry in Cuba, when, due to the abolition of slavery, manufacturers leased land to farmers and purchased their cane, bringing about a gradual separation of plantation and factory, so now, the rest period following the last war with Spain was used for the making of changes that were to affect materially the Cuban sugar industry. Many factories had been destroyed, many cattle had been killed, and many plantations burned over. The period of recovery from the misery experienced had necessarily to be slow. Many plantation owners could not rebuild their factories or make much needed repairs. Much additional capital was necessary to rebuild the sugar industry. There developed a tendency toward consolidation. Joint stock companies were formed. Very big factories called "Centrales" replaced the small crude factories that had been owned by individuals. The new factories were owned by companies founded on a much better financial basis.

RAPID RECOVERY OF CUBAN SUGAR INDUSTRY AFTER ESTABLISHMENT OF REPUBLIC -

After the war with Spain, the Cuban sugar producers recaptured their United States market for sugar in a remarkable fashion. During the five year period immediately preceeding the war, 1891-1895, Cuba exported a yearly average of 923,102 short tons of sugar to the United States.





For the five year period from 1896 to 1900, which included the war period and the subsequent depression, the exports of sugar to the United States fell to an average of 348,019 yearly. The next five years witnessed a recovery of these exports to an average of 935,736 tons yearly or an increase over the average for the pre-war period. The decrease in Cuban exports of 575,000 tons yearly during the war period was overcome by importation into the United States of an additional 661,667 tons per year on the average from other foreign countries and an increase of domestic production of 42,000 tons per year, consumption in the United States having increased by an average of 132,735 tons yearly. The price of sugar in the United States rose during the years 1896 to 1900, making it possible to secure the sugar necessary to replace the Cuban shortage. The production of sugar in Cuba rose rapidly during the first part of the new century, reaching a new high point in 1905 of 1,163,258 tons and continuing upward to 1,427,673 tons in 1907.\*

This remarkable increase in the production of sugar in Cuba following the near destruction of the industry during the war demonstrates the tremendous advantage Cuba enjoys in competition with the rest of the world in the cost of producing sugar. In order to be able to meet the competition of other producing centers, the Cuban sugar industry had to be reconstructed following the destruction of property during hostilities. American capital aided in this reconstruction work and the conversion of small inefficient factories into large modern ones proceeded rapidly after Cuba had gained her independence. In addition to the conversion of small factories, entirely new ones were constructed, especially on the north and south coasts and in the interior along the newly constructed railroad connecting Santiago with Santa Clara and Havana. The reduction in the number

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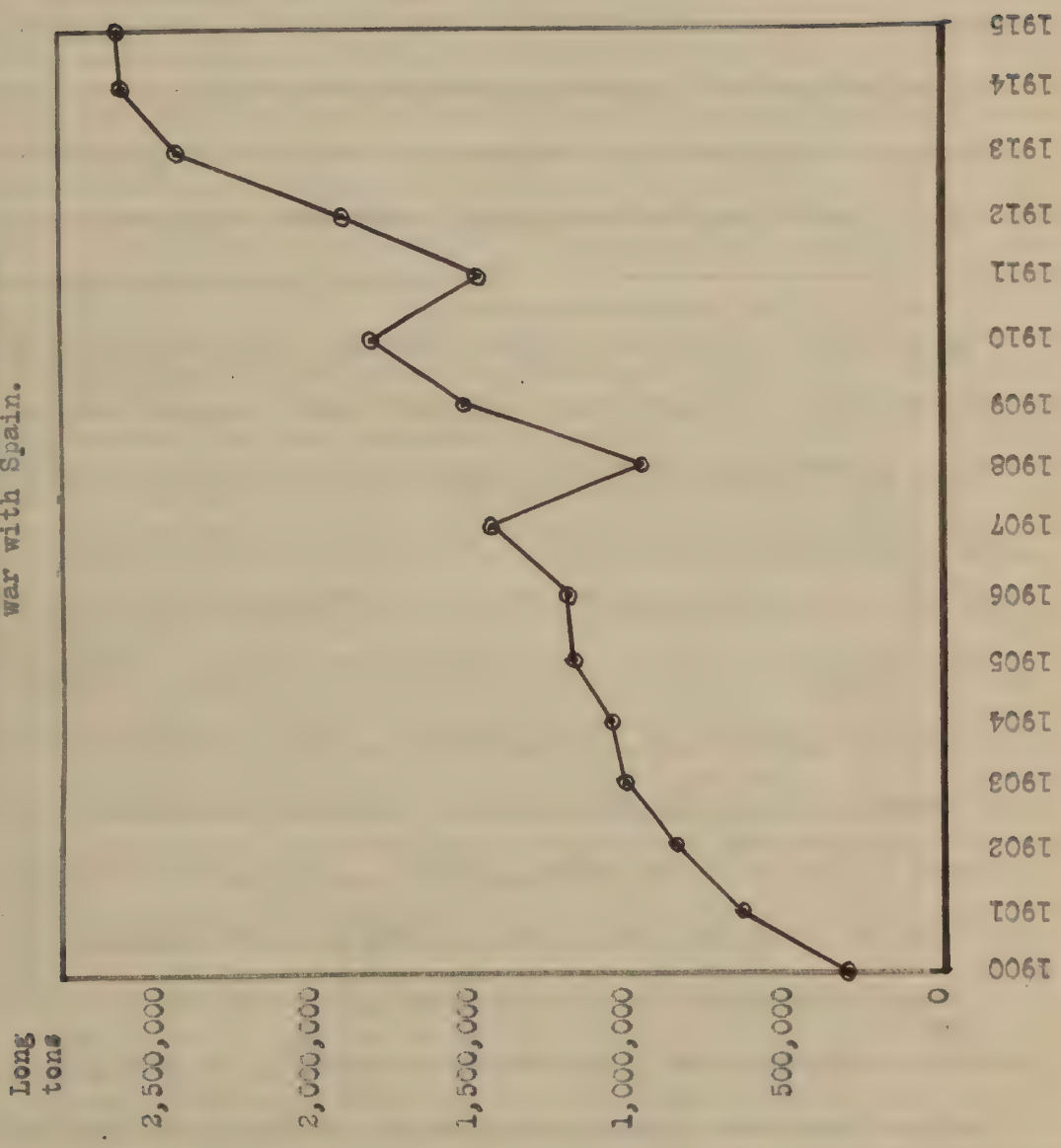
\*Bibliography No. 4.





CUBAN SUGAR PRODUCTION\*

Showing rapid recovery following war with Spain.





of factories and the increase in their size tended to concentrate the labor and thus relieve the shortage. The increased use of machinery and modern methods contributed to the same result. Whereas, in 1870 the average factory had a capacity of only 3,500 bags and in 1880 of only 9,100, in 1907 there were thirty-two factories having a capacity of over 100,000 bags and 154 more having a capacity of over 25,000 bags. (A bag contains about 1/7 of a ton)\*. By 1909 the average production of all factories in Cuba amounted to 56,803 bags. In this connection it is interesting to note that the American owned factories averaged 99,830, the Cuban owned factories, 49,858, and the Spanish and other European owned factories 44,497 bags.

EFFECT OF THE UNITED STATES TARIFF - Despite the fact that the Cuban sugar producers regained their United States market in a remarkable fashion from other countries following the war with Spain, they were unable to do more than hold their own in competition with domestic producers. Although increased efficiency in factory methods and new additions to capital equipment combined with her natural advantages enabled Cuba to lower production costs, she was unable to overcome entirely the tremendous handicap given domestic producers by the tariff on sugar imports into the United States. The 20% reduction in the tariff granted to Cuba in 1903 gave her an advantage over other countries, but did not enable her to reduce materially the proportion of the United States' sugar supply furnished by domestic producers. The advantage enjoyed by the latter amounted to 34% of the New York price of raw sugar in 1904 and, although varying somewhat from time to time, has enabled them to produce for the United States market about as much sugar as Cuba.

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\*Bibliography No. 3.





Consumption of sugar in the United States--Yearbook of the Department of Agriculture, 1923--1 square equals 250,000 pounds.  
New York wholesale refined sugar price--Agriculture Yearbook, 1923--1 square equals  $\frac{1}{4}$  ¢.  
Bureau of Labor wholesale price index-- one square equals 5%. Base 1913.  
Population of the United States at each census.

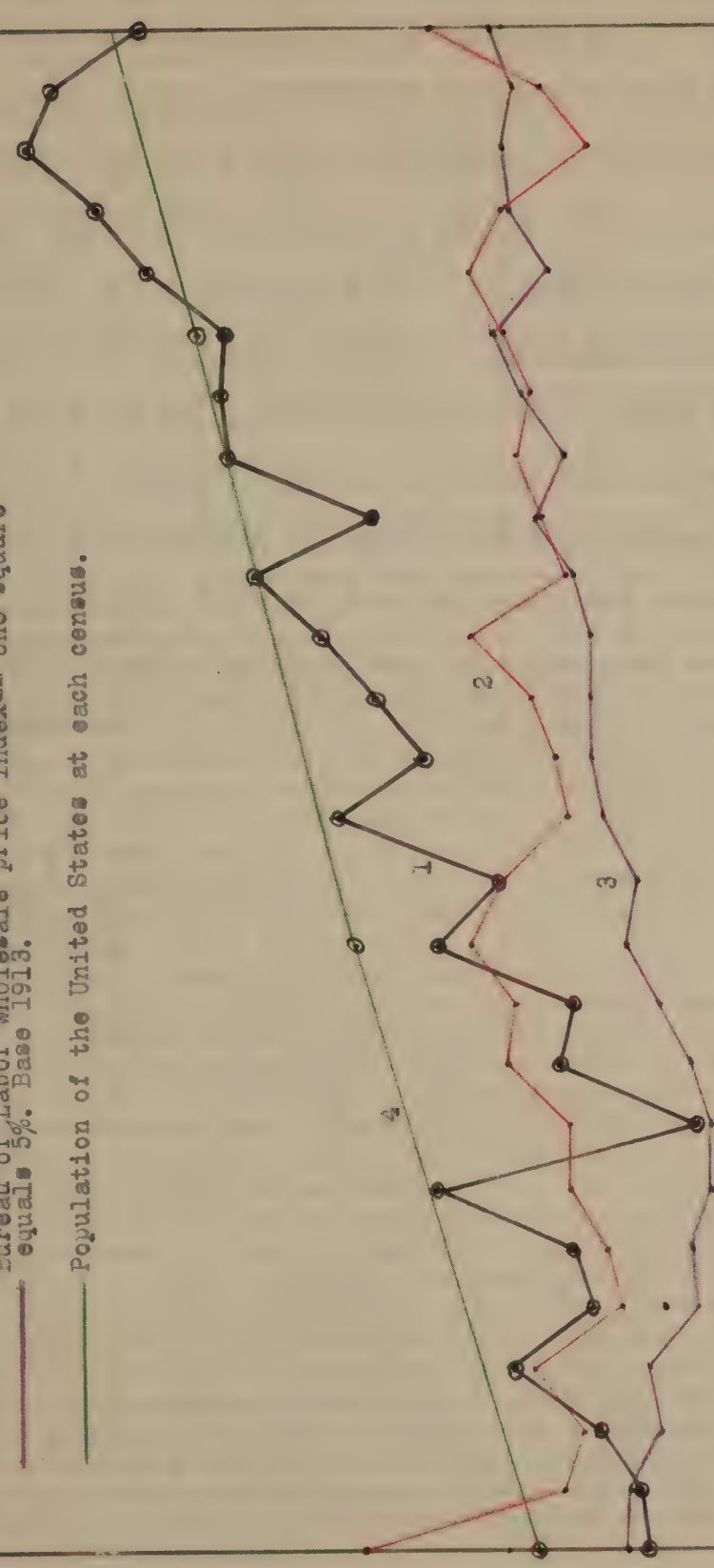


CHART SHOWING  
1. U.S. Sugar Consumption  
2. N.Y. Price of Sugar.  
3. Index of Wholesale Prices.  
4. Population of U.S.

1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915





From 1900 to the outbreak of the World War sugar consumption of the United States increased 60% so that Cuba was able to increase her production from a million tons in 1904 to two and a half million tons in 1914 despite the fact that her proportion of the United States supply increased only slightly during this period. The expansion of the United States market was caused by an increasing population and a relative decrease in the price of sugar. The outbreak of the World War changed the world sugar situation and enabled Cuba to increase her production of sugar more rapidly than at any other time in history. The fifteen years between the Spanish American War and the World War had been sufficient to enable Cuba to reconstruct her sugar industry along modern lines so as to be prepared to meet the sugar crisis that was approaching.



## CHAPTER II

### THE PRESENT IMPORTANCE OF CUBA AS A SUGAR PRODUCER.

#### A. THE WORLD WAR AND ITS EFFECT ON THE CUBAN SUGAR INDUSTRY.

REPLACEMENT OF BEET SUGAR BY CANE SUGAR. - The World War took place in one of the leading sugar producing centers. Europe produced nearly 84% of the world's beet sugar and 44% of the world's total sugar before the war. A large sugar trade between Germany and Great Britain was stopped by the war. Great Britain had to shift to cane sugar immediately and one of her first acts was to buy all the sugar available. The following table shows the shift that took place during the early years of the war:

#### UNITED KINGDOM CANE SUGAR IMPORTS, BEFORE AND DURING THE WAR.

##### Report of the American Sugar Refining Co. 1917 in Long Tons.

	1911	1913	1915	1916
Cuba	3,000	224,000	359,000	553,000
Java	166,000		398,000	383,000
Philippines	3,000		6,000	68,000
Peru	27,000	27,000	31,000	50,000
Mauritius	55,000	20,000	191,000	108,000
U.S.A. (Refined)			188,000	267,000
	267,083	271,888	1,176,000	1,432,000





At the same time the United States began exporting a considerable quantity of refined cane sugar. The shortage of beet sugar came suddenly and caught Europe with inadequate cane sugar refineries, so that the United States refined sugar for Europe. Cuba exported just as much sugar as ever to the United States, and in addition sold to Europe, and her production increased to meet the demand. During the next four years to 1919, the Cuban sugar industry expanded very rapidly. Under the stimulus of a high price for sugar caused by an increased demand, Cuba produced the following unprecedented crops:\*

1916	3,034,000 long tons
1917	3,055,000 long tons
1918	3,473,000 long tons
1919	4,010,000 long tons

THE TREND OF PRODUCTION, EXPORTS AND PRICES IN CUBA. - Exports

to the United States fell off, however, in 1916 and 1917 due to a reduction in consumption in the United States in 1917, and the decreased exportation of refined sugar by the United States in both years. The entrance of the United States into the European war materially affected the sugar consumption of the United States. In 1918 and 1919, coincident with an increased consumption in the United States and an increased exportation of refined sugar by the United States, the exportation of sugar from Cuba to the United States increased to a figure never before equalled (6,905,710,000 pounds). The <sup>average</sup> costs of production ~~margin~~ ~~margin~~ in Cuba rose more slowly than those of producers in the United States, and hence Cuban production rose at the expense of the latter. The total quantity of sugar produced in the United States and imported from her insular possessions declined from 4,794,089,000 pounds in 1916





to 3,757,590,000 pounds in 1919, in spite of the rising price of sugar. When the war ended the demand for sugar was increasing at a rapid rate and continued to do so for some time. A sugar shortage occurred in 1920 because the available supply was not conserved. The European demand for sugar continued also, and prices soared to unbelievable heights. The average price for 1920 was 13 cents for raw sugar in N. Y. despite the fact that a decline had set in before the end of the year. Interruptions in the distribution of sugar due to strikes and propaganda of all sorts tended to aggravate the situation. Cuba prospered as never before in history, but her prosperity was short lived. In the latter part of 1920 and first part of 1921, sugar dropped in price to such an extent that the 1920 average of 11.95 in Cuba dropped to 3.10 for 1921. Depression set in and Cuban industry suffered severely. The production for 1920 fell off somewhat and disorder occurred.

The election of 1920 held on basis of 1919 law occurred when Cuba was suffering the pains of sugar deflation, and the usual disputes and threats of revolt followed. The United States intervened and sent a single arbiter to compromise the dispute. Aid from Federal Reserve Bank prevented an economic crisis. The exports of Cuba to the United States declined nearly one-third due to European demand, and a smaller production. Exports of refined sugar from the United States fell off as a result.

When wages and other costs of production declined in 1920 and 1921, the United States producing centers recovered and increased the supply of sugar available in the United States. Production in Cuba increased slightly and exportation to the United States reached a new high level. Although Cuban production increased only slightly in 1922 and fell off in



1923, it rose to new heights in 1924 and 1925, and is estimated to reach 5,400,000 tons for the grinding season 1925-26.

POST WAR SHIFT IN THE SOURCES OF THE WORLD'S SUGAR SUPPLY. -

The importance of Cuba as a sugar producer has been greatly increased since the World War began. Production of sugar in Europe was materially decreased during the war and has not since regained its former volume. The cane sugar producing countries were called upon to meet the shortage in the sugar supply that was caused by the curtailment of production in the beet sugar producing countries. During the five years immediately preceding the war, the world's annual supply of sugar averaged 18,685,000 short tons and during the five year period following the year 1920, the world's annual supply of sugar averaged 20,513,000 short tons.\* Two major shifts in production took place between these two periods. The first was a shift from beet sugar to cane. Before the war beet sugar constituted 44% and cane sugar 56% of the world's total, while after the war beet sugar constituted 31% and cane sugar 69% of the world's total. The second shift was from production of sugar in Europe to production of sugar in Cuba. Before the war Europe produced 41% and Cuba produced 12% of the world's total supply, while after the war Europe produced only 25% and Cuba produced 22% of the total.

ABILITY OF CUBA TO MEET WAR SUGAR SHORTAGE. - The ability of Cuba to increase her sugar production sufficiently to replace beet sugar in the world market, and at the same time aid in meeting the increased demand for sugar in the United States, calls for additional comment. Under the stimulus of increasing prices, much additional capital was attracted from the United States. Importations of machinery into Cuba rose rapidly as is shown by the following table: \*





<u>Year</u>	<u>Kilos of Machinery</u>
1914	34,043,809
1915	91,467,716
1916	149,228,159
1917	113,380,517
1918	71,758,622
1919	86,284,301

\*Census of the Republic of Cuba 1919.

In 1919 there were 196 factories in Cuba, 70 of which were owned by Cubans, 62 by Americans, and 64 by other foreign capitalists. The American owned factories, however, produced over one-half of the sugar output. The part played by American capital in increasing Cuba's production of sugar, therefore must have been quite important. To take care of the increased cane crushing capacity of the sugar mills, the acreage of cane under cultivation was increased as is shown by the following figures from the same source:

<u>Year</u>	<u>Acres of Sugar Cane</u>
1914	1,371,094
1915	1,500,695
1916	1,606,490
1917	1,713,489
1918	1,881,060
1919	2,233,630

Data are not available showing the acreage of cane planted from 1920 on, but it probably continued to increase and additional capital was probably invested at least until the slump in prices in 1921. The most recent increase in production was probably also made possible by increased plant facilities and increased acreage of cane. Labor was stimulated to greater efforts by higher prices of sugar. The "colono", being paid in terms of sugar produced, could afford to push labor somewhat. Additional





immigration occurred from 1914 to 1919, and also after 1919 some of the increased demand for labor was no doubt met in this manner. For the five years before the war a yearly average of 37,800 immigrants reached Cuba. The average increased to 48,100 for the war period and again to 84,000 for the five years 1920 - 1924. About 48 per cent of these immigrants came from Spain and other European countries. At present, then, Cuba has the equipment to produce over 5,000,000 tons of cane sugar, and probably could increase her capacity very rapidly.

#### B. SUGAR PRODUCTION, TRADE AND MARKETS.

Cuba occupies a dominant position in the production of and trade in sugar at present. Producing a third of the cane sugar and a fifth of the total sugar produced in the world, she has no equal as a supplier of this valuable food. Very little of this sugar is consumed in the island and so her exports are nearly as great as her production.

WORLD SUGAR PRODUCTION. - Sugar is now produced on every continent and with one or two exceptions in every important country in the world. In the temperate zones beet sugar predominates, while in the tropics cane sugar alone is produced. In view of these facts, it is possible for a large proportion of the ~~people's~~ <sup>world's</sup> sugar requirements to be supplied by home production. ~~Since~~ Since Cuba produces sugar primarily for export, very little consideration need be paid to the countries producing small quantities of sugar, most of which is consumed at home. The following table indicates not only the absolute importance of the largest producing countries, but also the change that has taken place during and since the war, and the relation between beet sugar and cane sugar:



WORLD PRODUCTION OF SUGAR - IN THOUSANDS OF SHORT TONS

1909 1913 Aver.		1920 1921	1921 1922	1922 1923	1923 1924	1924 1925	5 Year Average
2,287	Cuba	4,406	4,517	4,087	4,539	5,175	4,545
3,281	Other American	4,120	4,144	3,959	4,138	4,494	4,171
7,661	Europe	4,114	4,355	4,982	5,533	7,357	5,268
2,649	India	2,825	2,925	3,347	3,658	3,248	3,201
1,485	Java	1,748	1,906	1,992	1,984	2,209	1,968
1,322	Other	1,168	1,320	1,130	1,498	1,688	1,361
18,685	Total	18,381	19,167	19,497	21,350	24,171	20,513

Adapted from Agriculture Yearbook 1923 and 1924.

8,297	World Beet	5,284	5,429	5,673	6,472	8,524	6,276
10,388	World Cane	13,097	13,738	13,824	14,878	15,647	14,237
18,685	Total	18,381	18,167	19,497	21,350	24,171	20,513

It will be seen from this table that Cuba not only doubled her output during and since the war, but also that the production of cane has averaged more than twice that of beet since 1920. The figures in the table show two tendencies, however, which might lead to a lessening of the importance of Cuba as a producer in the immediate future. European sugar production tended to increase in importance, while Cuban sugar production tended to decrease in importance, and the percentage of beet sugar to total sugar production rose from 29 to 35 during the period from 1920 to 1925. These facts are shown in the following table:





TENDENCIES IN SUGAR PRODUCTION SINCE 1920 \*

Year	Per Cent Cuban Production is of Total Production	Per Cent European Production is of Total Production	Per Cent Beet Sugar Production is of Total Production
1920-21	24	22	29
1921-22	22	23	28
1922-23	20	25	29
1923-24	19	26	30
1924-25	21	30	35
5 Year Average	22	26	31

INTERNATIONAL TRADE IN SUGAR. - The shift in production from beet to cane sugar, and the shift in the centers of production from Europe to Cuba changed the entire aspect of international trade in sugar. Instead of an exporting center, Europe became an importing center, throwing a heavy burden on Cuba and other cane producing centers. The manner in which Cuba was able to meet this strain indicates her potential power as a cane sugar producing center. The following tables give some idea of the present status of international trade in sugar:

WORLD EXPORTS OF SUGAR IN THOUSANDS OF SHORT TONS \*

	1909-13 Average	1920	1921	1922	1923	1920-23 Average
Cuba	2.010	3.493	3.205	5.581	3.861	4.035
U.S. & Canada	41	.501	.511	1.078	.283	593
Other American	464	.895	.904	1.992	.851	1.161
Europe	2.633	.578	1.014	1.029	1.288	977
India	27	44	27	18	22	28
Java	1.413	1.670	1.849	1.583	2.014	1.779
Other	884	791	978	363	1.041	793
	7.472	7.972	8.488	11.644	9.360	9.366

\* Adapted from Agriculture Yearbook 1923 and 1924.





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WORLD IMPORTS OF SUGAR IN THOUSANDS OF SHORT TONS.

	1909-13 Average	1920	1921	1922	1923 Prelim.	1920-23 Average
United States	2.123	4.037	2.983	4.860	3.855	3.934
Other American	444	473	520	786	543	581
United Kingdom	1.854	1.518	1.432	2.122	1.711	1.696
Other Europe	593	1.406	1.012	1.542	1.194	1.288
India	716	352	655	517	560	521
Other	1.395	1.031	1.125	918	887	990
	7.125	8.817	7.727	10.745	8.750	9.010

Adapted from Agriculture Yearbook 1923 and 1924.

These two tables show that Cuba is the largest exporter of sugar at present, and that the United States is the largest importer. Cuba's exports increased 100% since before the war, while total exports increased only 25%, showing that Cuba has quadrupled her importance in the sugar trade. Here again, however, the recovery of European producers is shown by the fact that exports increased from 578,000 tons in 1920 to 1,288,000 tons in 1923.

THE CONSUMPTION OF SUGAR. - Accurate data on world sugar consumption are not available for all countries. In view of this fact the following crude estimate is made to show roughly the proportion of the world's sugar supply consumed in the large consuming and producing centers:



WORLD ESTIMATED CONSUMPTION OF SUGAR IN THOUSTANDS OF SHORT TONS.

	Production	Imports	Total	Exports	Est. Cons.
Cuba	4.545		4.545	4.035	510
United States	2.748	3.934	6.682	533	6.149
Other Amer.	1.998	581	2.579	1.221	1.358
United Kingdom		1.696	1.696	13	1.683
Other Europe	5.268	1.288	6.556	964	5.592
India	3.201	521	3.722	28	3.694
Java	1.968		1.968	1.779	189
Other	785	990	1.775	793	982
<b>Total</b>	<b>20.513</b>	<b>9.010</b>	<b>29.523</b>	<b>9.366</b>	<b>20.157</b>

THE CONSUMPTION OF SUGAR. - About one-half of the world's supply of sugar is consumed in the countries producing it. The other half must enter international trade and be shipped from countries producing an excess to countries not producing enough to satisfy consumption requirements. Thus, since the war, an average of 9,000,000 short tons of sugar had to be transported in response to the law of supply and demand. The following table of percentages gives one some idea of the trade necessary to adjust supply to demand:

TABLE SHOWING SOURCES OF SUPPLY OF AND DEMAND FOR SUGAR 1921 - 1925.

Country	Per Cent of the World's Supply Produced	Per Cent of the World's Supply Consumed	Surplus Production	Excess Consumed
Cuba	22	3	19	
United States and Possessions	13	30		17
Other American Countries	10	7	3	
British Isles	0	8		8
Other European Countries	25	28		3
India	16	18		2
Java	10	1	9	
Other Countries	4	5		1
<b>Total</b>	<b>100</b>	<b>100</b>	<b>31</b>	<b>31</b>





The above table shows that there are two countries producing a large surplus of sugar, Cuba and Java. Of these two, Cuba is twice as important as Java. The table also shows that there are two countries consuming more sugar than they produce, the United States and the United Kingdom. Of these two the United States consumes an excess over production of twice that consumed by the United Kingdom. Expressing these facts in another way, Cuba supplies 61% of the world's export surplus of sugar, while Java supplies 30%, and the United States consumes 59% of the world's export surplus of sugar, while the United Kingdom consumes 26%. In addition to the above 59% the United States imports 9% of the world's export surplus for re-export in the refined state. The sudden shift from beet to cane sugar, following the war, found the United Kingdom and other European importing countries without adequate refining facilities for refining cane sugar. Therefore the United States still refines a considerable amount of the cane sugar consumed in Europe. In the above calculations the production of sugar in Hawaii, Porto Rico, and the Philippine Islands have been treated as production of the United States. Since the sugar produced in these territories and possessions of the United States has to be actually shipped in international trade, the share of the United States in that trade is increased. For the years 1918 to 1922 inclusive, the sugar requirements of the United States were supplied about as follows: Cuba 50%, domestic beet 18%, Hawaii 11.4%, Porto Rico 8.2%, domestic cane 4.7%, Philippine Islands 2.7%, and other sources 5%.\* Of the dutiable imports of sugar into the United States during the fiscal year ended June 30, 1923, amounting to 3,929,000 short tons, 3,865,000 or 98% came from Cuba. The sugar received from Cuba that year represented over

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\*Bibliography No. 8.





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three-quarters of her sugar exports. During 1924 cane sugar was the chief import commodity of the United States and ~~next to Canada,~~ Cuba was our chief source of imports.

The foregoing statistics show that Cuba has had an unprecedented rise to importance during and since the war. Both in production and trade she leads the other countries. On the other hand Cuba's chief market, the United States, is by far the largest importer and consumer of sugar. It might be well to call attention again to the rising importance of Europe as a producer during the last three years, to indicate the possible future trend of the sugar industry of Cuba.



### CHAPTER III.

#### FACTORS RESPONSIBLE FOR GROWTH AND PRESENT IMPORTANCE OF CUBA AS A SUGAR PRODUCER. \*

In the two preceding chapters the history and present importance of the sugar industry of Cuba has been presented. Mention has from time to time been made of the factors responsible for advances or recessions occurring in the development of this industry. In the present chapter all of the factors operating in the Cuban sugar situation will be fully discussed in an attempt to explain, first, the recent rapid rise and second the present great importance and future possibilities of Cuba as a sugar producer. The factors involved will be discussed under five headings, namely, (A) The Geographic factors, ( B) The short haul to market, (C) Labor and Population, (C) Capital and Science, and (E) The United States in its relation to Cuba.

#### A. FAVORABLE GEOGRAPHIC FACTORS.

THE OPTIMUM FOR SUGAR CANE. - Sugar cane is a tropical or a sub-tropical plant and is very sensitive to climatic conditions. It grows best in low level areas, but can be grown at an elevation of 4,000 feet. A hot, moist climate with an annual rainfall of sixty inches, which occurs previous to planting and during the growing season and cool, dry weather in the ripening and harvesting period are necessary if sugar cane is to be produced to the best advantage. A clay loam is most suitable,

\*Bibliography Nos. 7, 9, 10, 11, and 24.





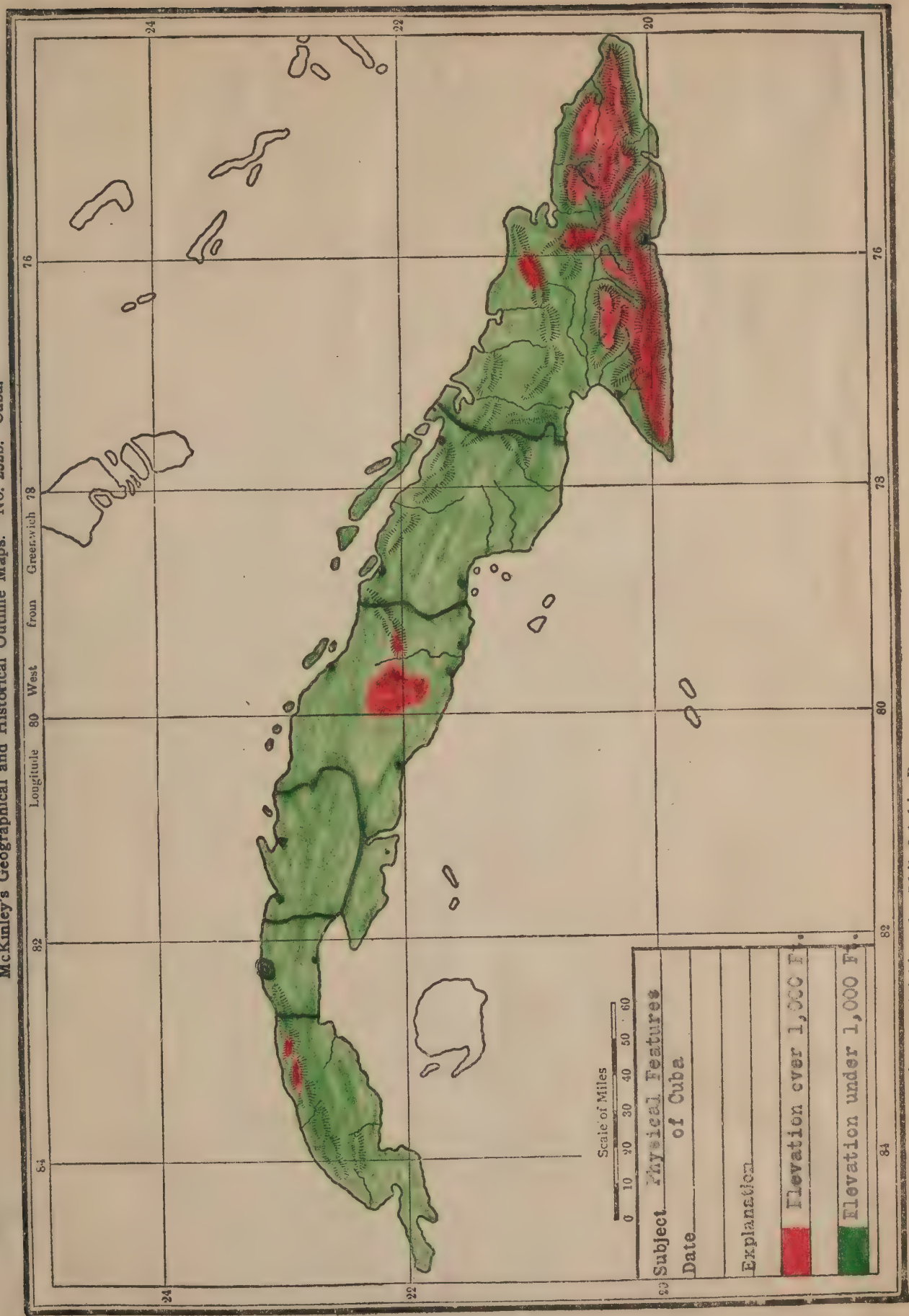
since it retains moisture and at the same time remains sufficiently open to permit of proper aeration and drainage. Potash, phosphoric acid, nitrogen and lime are all found in good cane growing soil.

EXTENT OF LAND SUITABLE FOR SUGAR CULTURE. - Due to the action of the elements over a long period of time, Cuba has been largely reduced to fertile plains. Over 80% of its total area is actual or potential sugar land and an additional 10%, though not quite so productive, is as good for sugar cane production as land now used for that purpose in other countries. Cuba contains a land area of 41,634 square miles. It is about the same size as Pennsylvania or Virginia. The total mountain area of Cuba does not exceed 9,000 square miles. The highest mountains are found in the province of Oriente where the elevation rises to the height of 9,000 feet. This province is the wildest and least developed of any in the island and yet it contains many fertile valleys that have recently been developed to produce sugar. The other mountains of Cuba are low, not exceeding 2,500 feet. One extensive swampy area in the southern coastal plain covers about 1,500 square miles. The rest of Cuba is made up of level, gently sloping land.

If necessity demanded or opportunity afforded, Cuba could easily supply the whole world with sugar at the present rate of consumption. The 4,033,455 tons of sugar produced in 1920-21 was grown on 10% of the area of the island. Since 20 tons of cane yielding 2 tons of sugar can be produced on one acre annually, the above statement is conservative provided other factors do not stand in the way.









SOIL FERTILITY CONDUCTIVE TO HIGH PRODUCTIVITY. - Not only is the land of Cuba especially adapted to sugar production because of its level nature, but it is also very fertile. Limestone sediments aided in forming the land of Cuba during the period it is believed to have been submerged under the sea. This limestone still covers most of the island. During long ages the limestones have been disintegrating until red and black residual loams of great fertility have resulted. In spite of the fact that the lands of Cuba have been producing sugar in certain cases for over a hundred years it has been found unnecessary to use fertilizer. No other land in the world except that of Hawaii produces a higher yield of sugar cane to the acre than that of Cuba, and in Hawaii fertilizers and irrigation are necessary. The red lands, which are found in Havana and Matanzas provinces are of porous residual clay loam that drains well and is readily tilled. The black soils are also exceedingly fertile and, although not so easily drained, produce exceedingly heavy crops especially when newly cleared.

THE CLIMATIC FACTOR. - In discussing the conditions under which sugar cane prospers best, great stress must be laid on the factor of climate. The temperature of Cuba is very uniform throughout the year, ranging between 70° and 83° Fahrenheit most of the time. Frost occurs only in the high altitudes and snow is never known. The evenness of temperature throughout the island and throughout the year is due in large measure to the marine influence and to the fact that the island extends east and west. There are two well defined seasons in Cuba the rainy season





and the dry season. The rainy season extends from May to October and the dry season from about November to April. The rainfall is not uniform from year to year although there is a distinct seasonal regularity. About 78% of the rainfall comes during the rainy season, during which time it is abundant, periodical and long-lasting, abundant sunshine being provided between seasons. More rain falls on the interior than on the coast. Cuba lies in the trade wind belt and is subject to occasional hurricanes. The chief climatic factors favoring the production of cane sugar in Cuba may be summed up as follows:

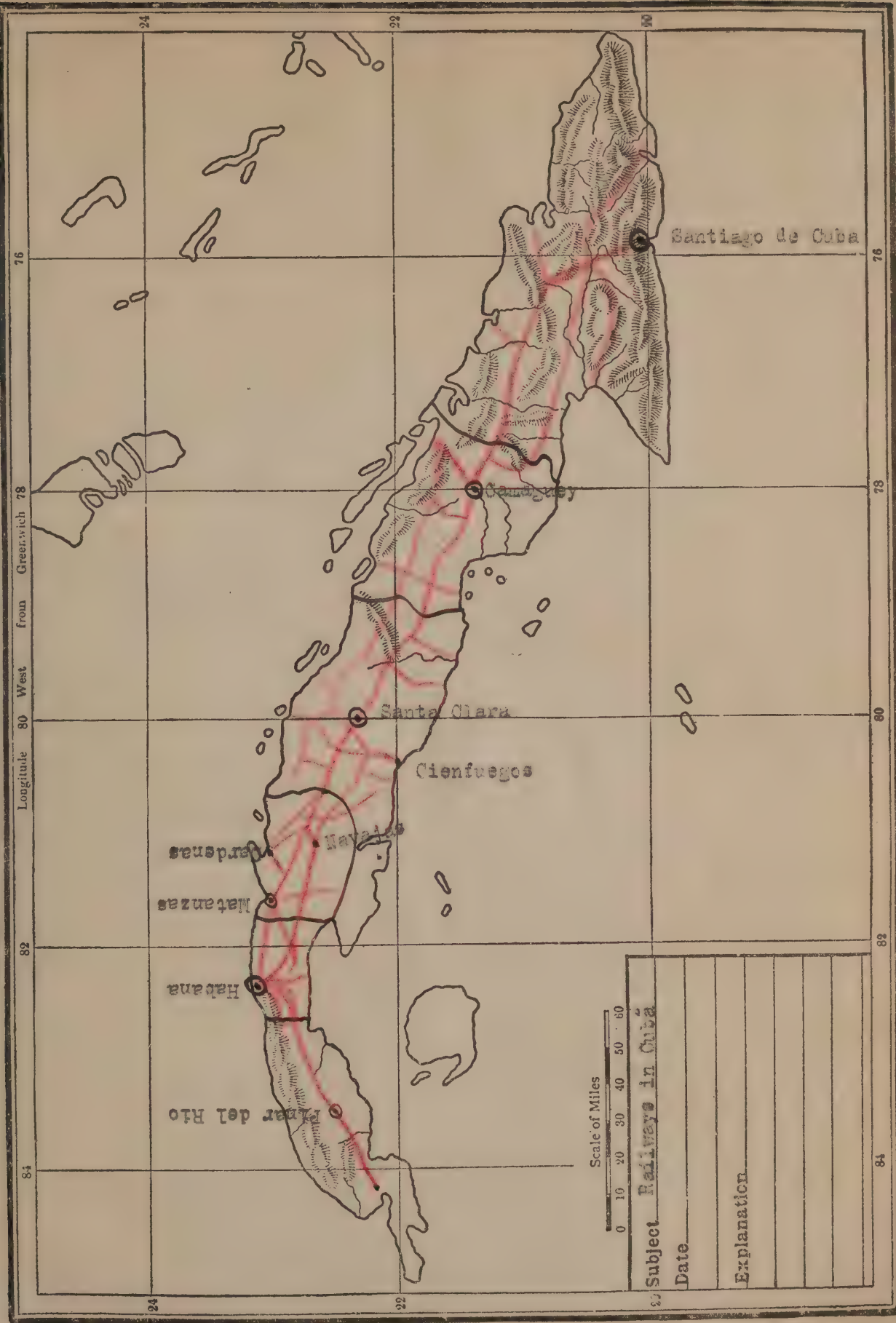
1. No frosts, hence, continuous growth of sugar cane is permitted.
2. A hot, rainy growing season, permitting the rapid growth of the crop.
3. A season of little rainfall, permitting the ripening and economical harvesting of the crop.
4. An even temperature throughout the year, permitting the steady unchecked growth of the sugar cane.
5. A climate in which white men can live and work.

#### B. EFFECT OF SHORT HAUL TO MARKET.

Geographic conditions also have a bearing on the problems of transportation. This subject will be considered in three parts, the internal transportation system, the harbors and the external transportation facilities.









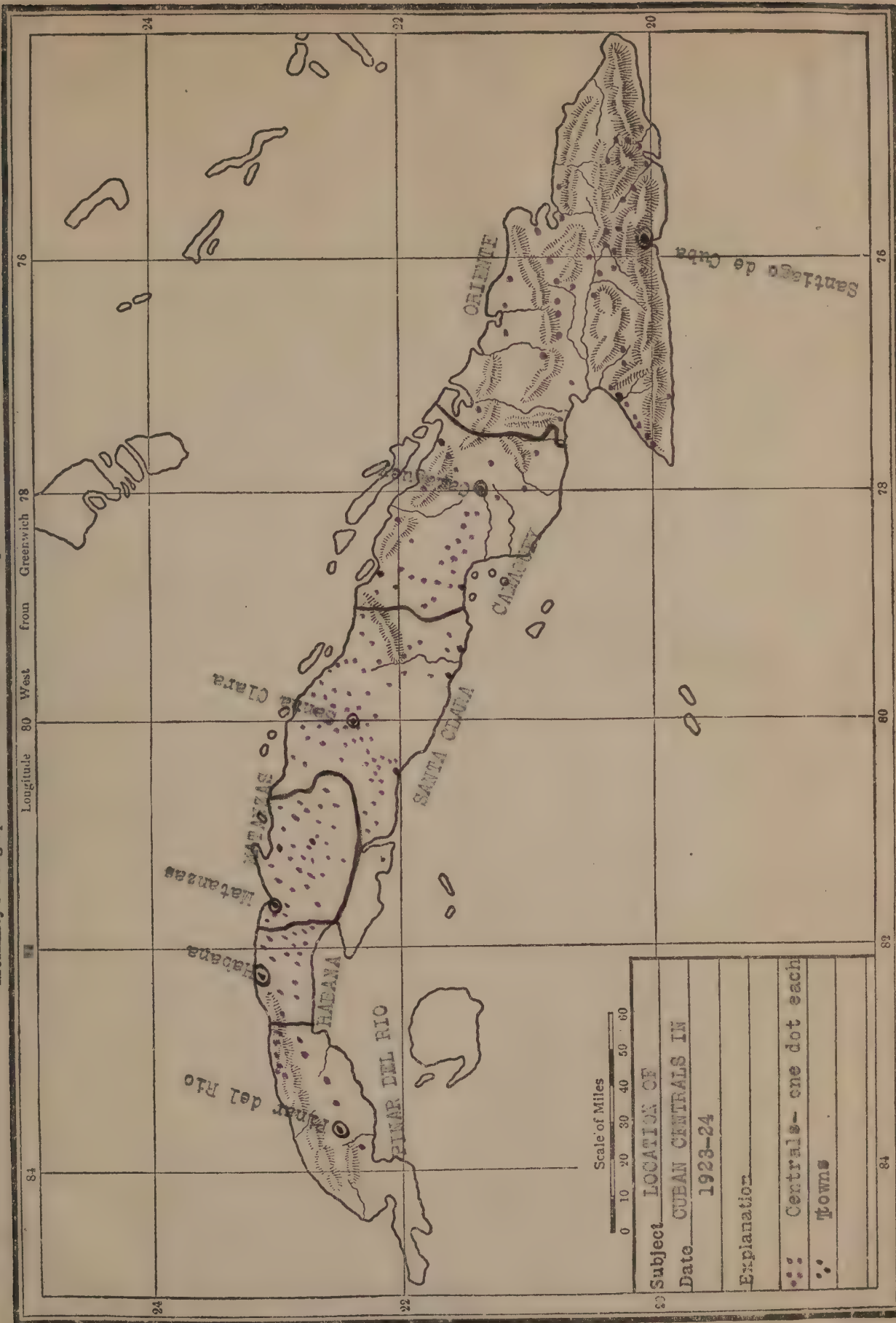
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INTERNAL TRANSPORTATION SYSTEM. - The plantations are not far removed from the factories because of the poor roads and the fact that much of the cane is hauled to the factories in ponderous ox carts. One group of 22 plantations has 15,000 work ~~animals~~ for this purpose. Other transportation equipment consists of railways and tramways, which are found on every large plantation, one having 200 miles of railroads with 25 locomotives. The cost of getting the cane to the factory is still quite high in some cases. Cuba has only about 1,300 miles of first class roads, most of which are macadamized. Many of these roads were built by the Americans during their occupation of Cuba and the rest by the Cuban Government.

To get the raw sugar from the factories to the ports use is made of both public and private railways. The center of the island is traversed by the trunk railroad, which forms the backbone of its internal transportation system. The railways are good, especially between Havana and Santiago. The three western provinces have all the railways needed, but Camaguey and Oriente have large areas that lack railways. This lack of transportation is being remedied, however, by the extension of railways on sugar estates that are being developed in those provinces. The main trunk line that runs the full length of the island is connected by short lines with the ports and sugar centrals. Since many of the centrals are not on the seaport, these short lines facilitate very much the export of sugar. Cuba has about 2,800 miles of railways. In addition to the railways available for public use, there are about 4,000 miles of railway lines devoted exclusively to the use of the sugar plantations by whom they are owned.











Nearly all of the sugar is now shipped from 20 ports, most of which are located on the north coast. The explanation of this fact lies in the geographic position of the island. Since the length of Cuba extends east and west, the northern ports are several hundred miles nearer the United States, Cuba's leading market.

ABUNDANCE OF HARBORS.- The connecting link between the internal transportation system and the steamship lines is an abundance of harbors. Cuba was lifted out of the ocean in several successive stages as indicated by the rock terraces rising one above the other along its abrupt and cliff like coast. The water around Cuba is shallow and is dotted with coral islands or reefs. Further evidence of the uplifts in the formation of Cuba is found in the newer valleys formed in the floors of the older valleys. A low, scarcely discernible water shed or divide forms the east-west axis of the island, causing short rivers to flow north or south to the ocean. Numerous and excellent harbors are found at the mouths of these rivers. The harbors are very conveniently located as regards the different portions of the island thus facilitating trade from any location in Cuba with the outside world. Enormous sugar crops are exported quickly and without congestion through the numerous pouch-shaped bays that characterize the harbors on both sides of the island. ~~Havana, Cienfuegos, and Santiago~~ <sup>Nuevitas, Cardenas and Matanzas</sup> are the most important. Other harbors are within easy access of every plantation.

EXTERNAL TRANSPORTATION FACILITIES. - The geographical position of Cuba is especially advantageous for marketing its sugar. Low external transportation costs, therefore, compensate in part for high internal transportation costs. The cost of getting the sugar to Boston, New York



OCEAN RATES IN CENTS PER 100 POUNDS, 1921-1922  
CROP, FOR SUGAR BETWEEN THE POINTS DESIGNATED\*

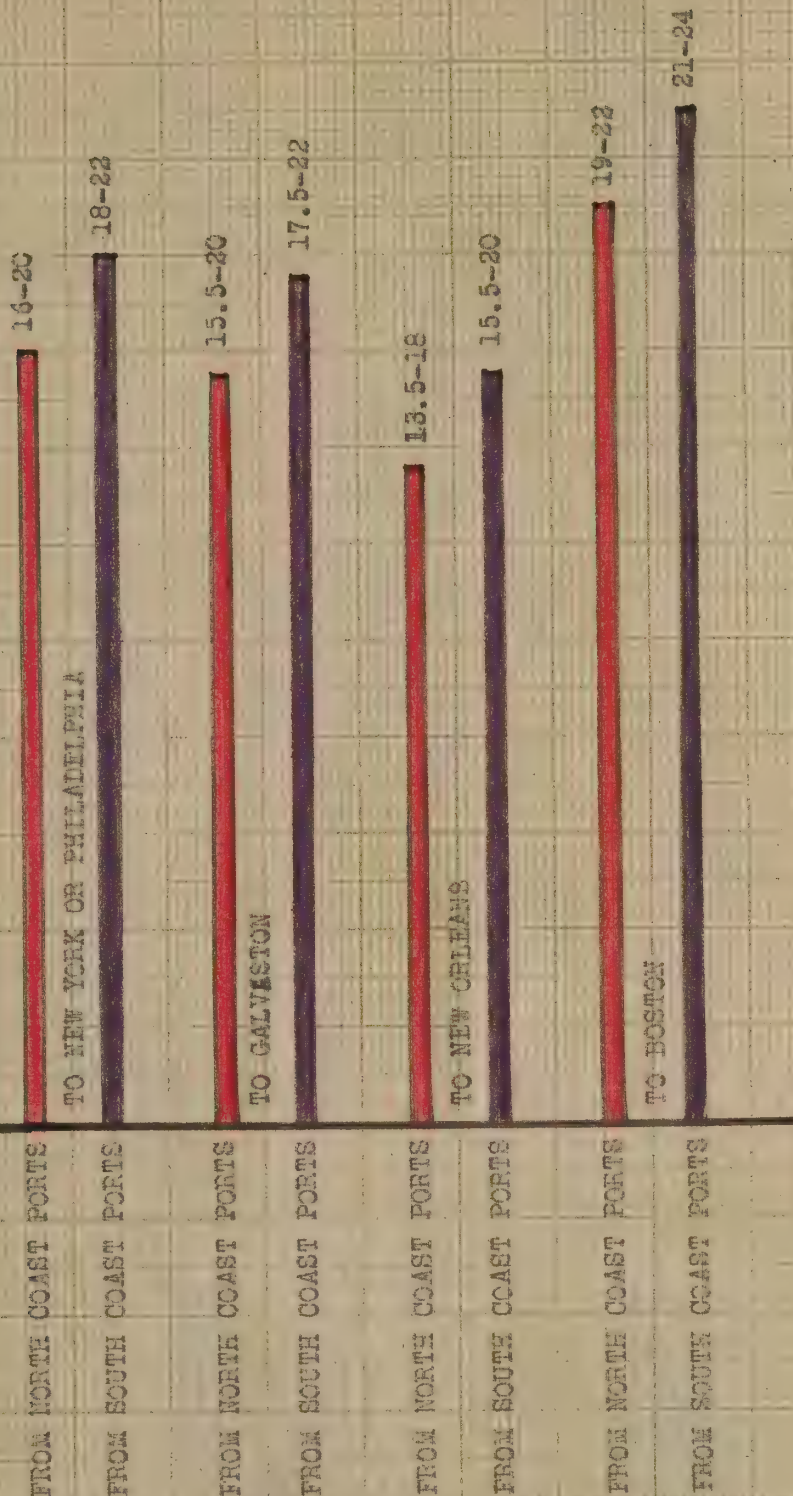
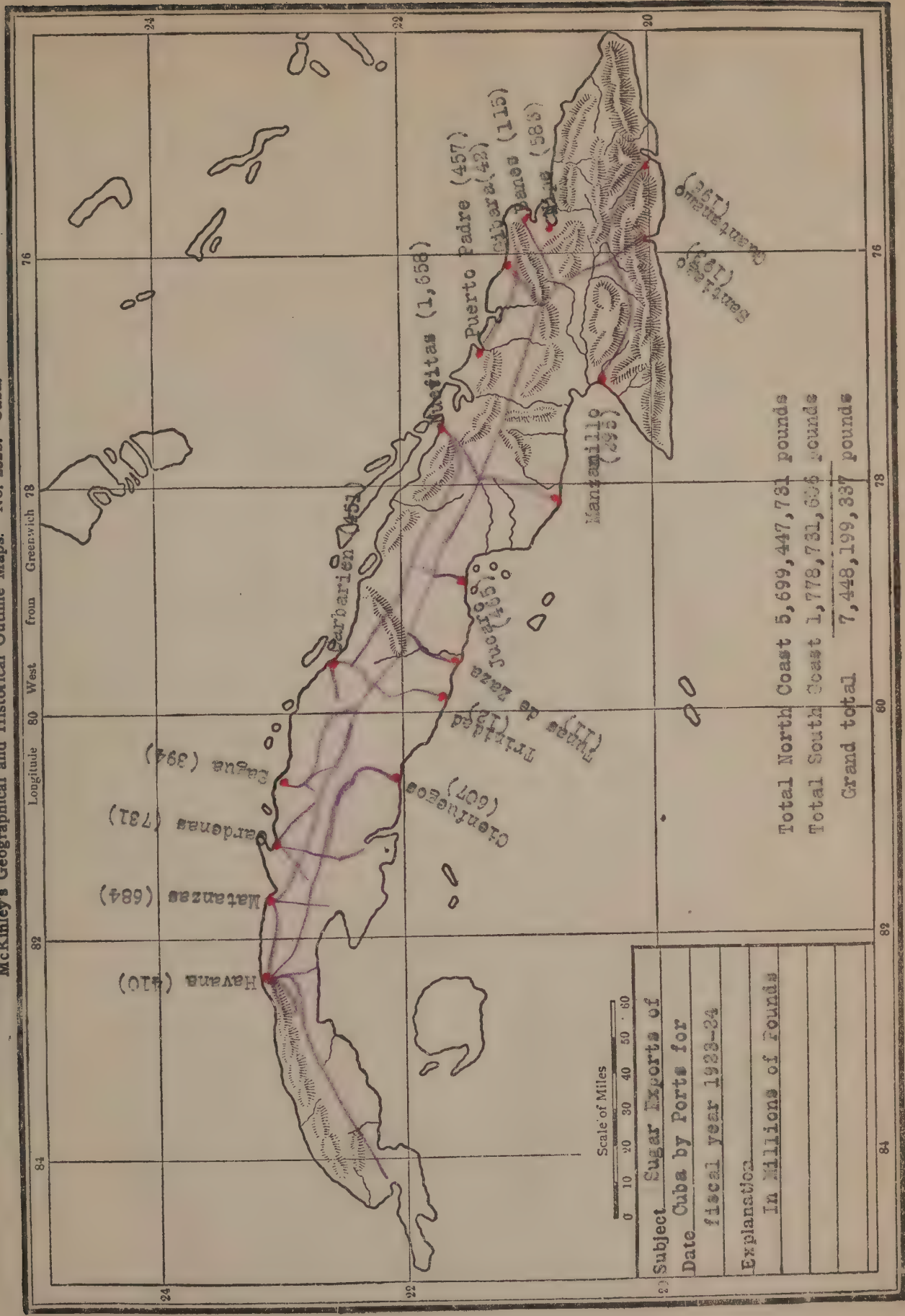


CHART  
SHOWING ADVANTAGE  
OF NORTH COAST PORTS  
IN MARKETING RAW SUGAR







Comercio Exterior, Habana, Cuba.





or Philadelphia is normally not over a quarter of a cent a pound. It is always true in commerce that the proximity of an island to the mainland is important. A short haul makes for cheap transportation between Cuban ports and those of the southern and eastern coasts of North America. Cuba is situated on the trade routes to South America, to the gulf ports and to the Caribbean Sea and the Panama Canal. In 1919 there were 44 American lines operating between United States and Cuban ports and 14 European lines operating services to the ports of Spain, England, France, Germany, Holland, Sweden, Norway, Denmark, Italy and Belgium. In addition one Brazillian and two Japanese lines made regular stops at Cuban ports and several coastwise steamers plied between various Cuban ports.

As compared with other sugar producing centers supplying the United States market, Cuba has the lowest marketing cost of any with the exception of Louisiana. A short haul to market made up of a small proportion of the more expensive land transportation and a large proportion of the cheaper water transportation, therefore, gives Cuba an effective weapon in competition with other sugar producers.

C. LABOR AND POPULATION. - The labor and population problems have been important in the Cuban sugar industry from the outset. While most authors even yet tend to stress the importance of the labor problem, it is being gradually solved by the increasing use of capital and the transfer of labor from other districts. Cuba would be benefited by the organization of other industries to employ labor between June and December.

THE LABOR SITUATION. - So far mechanical devices to cut cane have not proved practical and so a large force of laborers is required to cut and ~~strip~~ the cane by hand. This force cannot be used during the balance  
strip



of the year, however, and so the practice of obtaining laborers from Jamaica and other points in the West Indies has grown up. Additional labor is obtained from Spain and the Maderia Islands. 70% of the immigrant labor stays only for the sugar harvest. The labor required in Cuba is for the most part of the manual sort even in the factories. The highly skilled workmen have come from overseas. In labor efficiency the Spaniard exceeds the native Cuban in factory and field operations, except in the cane cutting operation, where the negro is the best workman. Tactful management is required since in Cuba labor must be led and not driven. The cost of labor is usually high in Cuba and, since the work obtained depends partly on the wages paid as well as on the way laborers are fed and managed, is apt to fluctuate in accordance with the pressure put upon production. The Cuban is neither thrifty nor frugal, and like all people in tropical countries is irresponsible, taking frequent vacations and working only under the spur of necessity. The Spaniard on the other hand usually aims to accumulate a competency and is the most mobile and most dependable laborer. The labor problem in Cuba is by no means the most important factor in the sugar situation. The fact that a problem exists at all lies more in the fact that the rural laborer spends less than half his working time in the fields. The proportion of transient labor to total labor required is small and is important only in the cane cutting operation. The following summarizes fairly accurately the labor situation in the Cuban sugar industry.

1. Profits do not justify employing permanently more than a fraction of the fields hands needed at crop season.
2. No other local industries exist to carry the labor supply over the dull season.





3. As a consequence, higher wages must be paid during the drop season than other seasons.

4. During slack seasons field hands cultivate garden patches and become independent of landed proprietors in matter of employment and afford a less reliable source of labor.

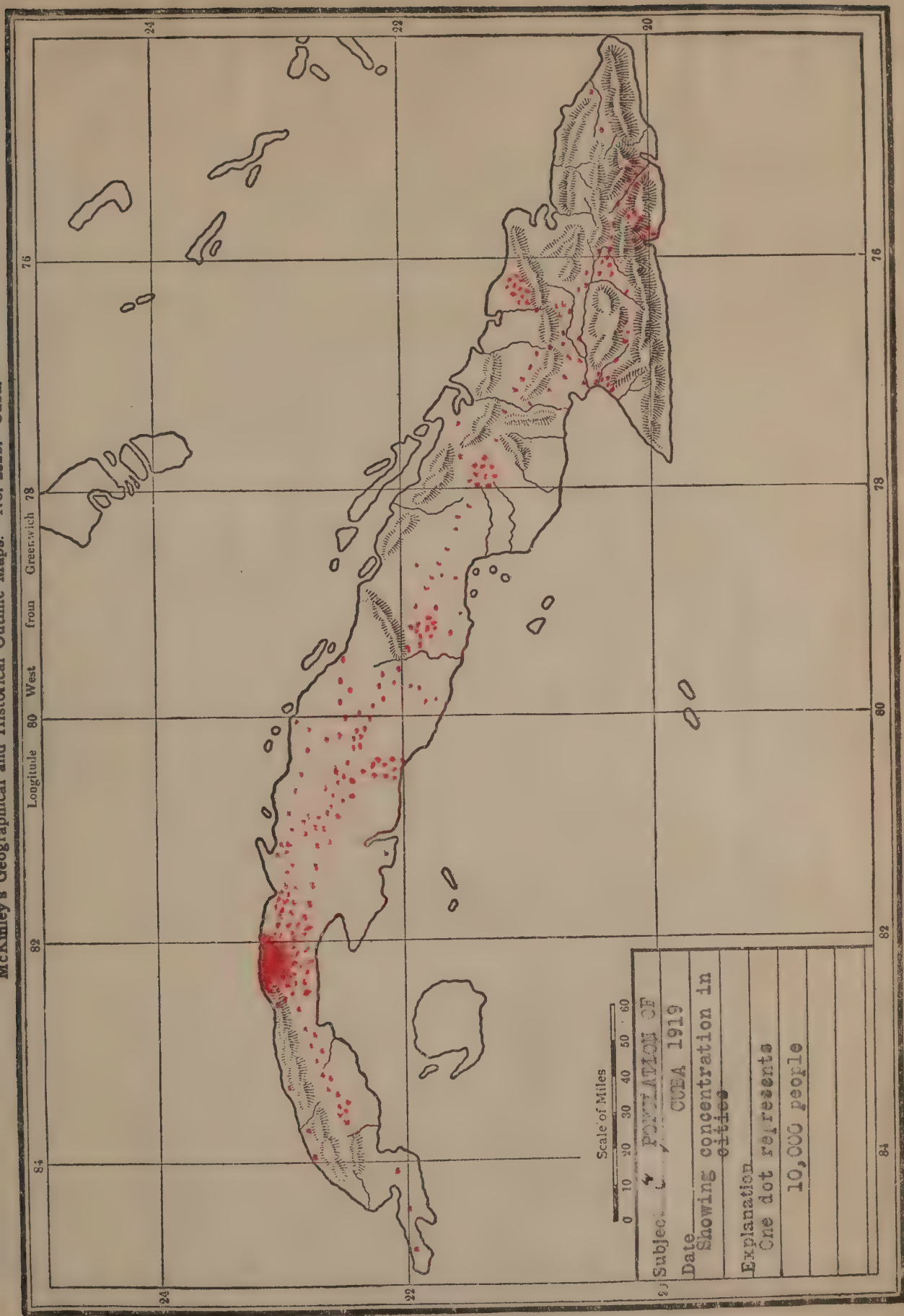
5. The tendency of rural labor to become attached to land lessens its mobility and hence oversupply and undersupply may exist in adjoining districts.

6. A wide variation in wages accompanied by uniform social conditions characterizes the rural labor of Cuba.

POPULATION. - Closely related to the labor problem in Cuba is the factor of the makeup of the population. While the colored population of Cuba is said to be superior in many respects to that in the United States, the increase in the proportion of whites has aided very materially the development of the sugar industry. Up to 1841 the percentage of negroes to total population increased, but since that time it has declined until in 1919 only 27.2% of the people in Cuba were negroes as compared with 58.5% in 1841. How accurate these figures are is not known. The color line has never been closely drawn in Cuba and much mixing of blood has occurred, and it is highly probable that many who are classed as white have African blood in their veins. Nevertheless the quality of the population has increased and white laborers have been replacing negroes in the field operations since the middle of the 19th century. During this period a higher degree of skill has developed, permitting the use of more capital equipment in the production of sugar and creating a more stable labor situation.









The improvement in the character of the population has, furthermore, made possible the freer exchange of commodities with temperate zone countries and has increased the export surplus of the island. At present there is an increasing immigration into Cuba. About 40% of these immigrants are Spanish and some are from other European Countries. Furthermore, the European immigrants are the only laborers who have remained in Cuba permanently, and so there is a possibility that the character of the population in Cuba will continue to improve and eventually solve the labor problem.

#### D. CAPITAL AND SCIENCE.

THE PLANTATION AND THE "COLONO". - The statement has already been made that modern ingenuity aided by the increasing use of capital is gradually solving the labor problem. In elaborating this contention a description of the sugar industry in Cuba will be given. Two stages of the sugar industry are located in Cuba, growing the cane and producing raw sugar from cane. It is in the latter stage that most of the progress has been made and in which most of the capital equipment is used. Very little progress has been made in the selection and improvement of cane to increase the sugar content, and the future holds great promise in this respect. Recent experiments in Porto Rico have produced a variety of cane yielding 21% of sugar, whereas the present yield in Cuba is about 19%. Even if the new variety of cane proves suitable, its introduction into Cuba will be slow since cane fields are not renewed until about ten





-11-

years old. Considerable capital is being invested in labor saving devices used in the preparation of the land and in hauling cane to the mills, but the harvesting of cane is still done by hand labor, and although over three-quarters of the land in Cuba is level enough to permit the use of the most modern agricultural machinery, a great deal of plowing, hauling and other work is performed with oxen, mules and horses.

In the newer sections of Cuba the operation of the modern plantation has been placed on a scientific basis. The proposed sugar land is thoroughly examined by experts. It is then surveyed and laid out in sections in such a manner that work can be handled efficiently and a proper record of costs can be kept. After being cleared and provided with drainage ditches, the land is ready for the plow. The slow ox plows are being replaced by very efficient steam plows on the large areas and tractors on the small areas. After the land has been plowed it is harrowed to pulverize the soil and prepare it for planting.

Planting the cane is still a hand operation, but is not so important since land once planted will produce without replanting for eight to twelve years. Cane cuttings are inserted in the soil seven feet apart each way. Planting should be performed in the spring following about three inches of rainfall. During the first months of growth the cane must be cultivated by hand, but later it may be cultivated by machinery, tractors, mules and oxen being used to pull the cultivators. In from fifteen to eighteen months the cane may be cut for the first time. After that cuttings are made yearly.



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The cutting season lasts from December to June, but may be extended over a longer period if necessary. As previously stated, cutting is a laborious hand operation, and the supply of labor for performing it is at present inadequate for the needs of the island. Attempts have been made to use cane cutting devices, but so far they have not proved successful in Cuba. The cane is cut in four foot lengths and stripped of leaves. Proper supervision is necessary in order to keep the mills running continuously day and night throughout the cutting season. On the plantations harvesting is on a contract basis supervised by the factory. Laborers are paid by the contractors 75¢ to \$1.00 per 100 arrobas (about one ton) for cutting and loading the cane. After it is cut the cane must be hauled to the railroad. For this purpose also tractors are replacing the slow ox-carts and cutting down the labor requirements.

80% of the cane ground at present is produced by tenant planters called "colonos," who sell their product to the owners of the centrals. About 22,000 of these "colonos" operate in Cuba, each working 66 acres of land on the average.

THE FACTORY.- As already stated, the greatest advancement has been made in the factory. Here capital investment and scientific discovery have brought about centralization of manufacture that has resulted in economies. Less than 50 tons of cane could be ground daily in the old mill and less than 100 pounds of sugar per ton resulted. The labor cost under this system was almost as much as for a modern factory of 1,000 tons daily cane crushing capacity that produces 200 pounds of sugar per





ton. Improved machinery has been designed for the various operations carried on in the factory such as extraction of juice, clarification, evaporation and formation of crystals, and separation of the crystals from the molasses. Science has brought about complete chemical control. Daily and weekly reports of operations at every stage are made from samples properly taken at various stations throughout the factory. The percent of juice extracted from the cane measures the milling and grinding efficiency. As indicated above this has been doubled in the last twenty years. The boiling house efficiency is measured by the percentage of sucrose recovered from the juice and the general factory efficiency is indicated by the percentage of sucrose in raw sugar produced based on total sucrose in the cane entering the factory. The increase in consumption of the United States has been partly due to cheapening of sugar through scientific management in its production. Raw sugar fell in price from 2.88 per pound ~~without duty~~ in 1890 to 2.03 per pound in 1914 ~~with duty of 1.55 to 1.69 cents per~~ ~~ounce~~ in spite of a rise in price of all other food staples of over 15% on the average.

At present Cuba has 180 factories or centrals, many of which are the most modern type. The largest of these are located in the newer sugar growing districts in the Eastern half of the island. While Camaguey and Oriente together produce 55% of the sugar of Cuba, only 37% of the total number of factories are located in these two provinces.\*

#### E. THE UNITED STATES IN ITS RELATION TO CUBA

The nearness of the United States to Cuba has always been an important factor in their relations. Furthermore, the contrast in climate



between them has made their products complement each other to a great extent, Cuba furnishing tropical products and the United States furnishing temperate zone products. Cuba imports a large amount of manufactured goods, 90% of which comes from the United States. The 3,000,000 people in Cuba buy more American goods than the 400,000,000 people in China. In 1920 Cuba sold the United States products of greater value than any other country. The per capita value of these exports was larger than that of any other nation in the world. The makeup of Cuba's exports in 1919 was as follows:

Sugar and Sugar Products	88.6%
Tobacco	8.3%
All Other	3.1%

The makeup of her imports for the same year was as follows:

Foodstuffs	37.7%
Machinery, etc.	13.4%
Textiles	12.7%
Metals and Metal Products	6.7%
All Other	29.5%

The importance of the relation of the United States and Cuba is further emphasized by the following statistics, which, like the above, were taken from the "Census of the Republic of Cuba" for 1919:

AVERAGE PER CENT OF TOTAL FOREIGN TRADE WITH COUNTRIES  
NAMED.

Imports into Cuba	United States	Spain	Germany	France	United Kingdoms
1909 - 1913	52.0	8.0	7.0	5.5	12.5
1915 - 1919	73.0	6.0	0.0	3.0	6.0
Exports from Cuba					
1909 - 1913	85.0	0.5	3.0	1.0	7.0
1915 - 1919	76.0	1.0	0.0	3.0	18.0





The United States has been a factor in the development of the Cuban sugar industry in four ways, (1) as a source of capital, (2) as a political stabilizer, (3) as a market for sugar, and (4) as a competitor in the production of sugar.

THE FLOW OF CAPITAL FROM THE UNITED STATES. - The investment of the United States in capital equipment and plantations in Cuba has reached millions of dollars. A few of the largest mills produce as high as 800,000 to 1,000,000 bags of sugar a season. The nearness of Cuba to the United States and the close relations of the United States with Cuba have aided in attracting large amounts of capital. In recent years American capital has revolutionized the Cuban sugar industry. The largest and most efficient mills are owned by Americans. The cost of producing sugar under present methods is only about one-fourth of what it was under Spanish methods. In 1916 nearly 4,000,000 acres of land and equipment valued at nearly a billion dollars were owned by Americans. The Cuban Cane Sugar Corporation is the largest producer of sugar in Cuba. It owns over twenty plantations and has an investment in plant of over \$50,000,000. American capital has aided Cuba in building million dollar mills, in extending railways, in establishing banks, in building a car ferry from Key West to Havana, and in general in capitalizing her fertile lands, her sugar climate and her advantageous geographical position.

The effect of American capital in decreasing the cost of producing sugar and increasing production following the war with Spain has been fully discussed. The effect of increasing capital investments by Americans has been just as marked during and since the <sup>World</sup> war. American owned mills were

the United States is a country of great resources and potential.

It is a country of great wealth and power, and it is a country of great hope.

It is a country of great freedom and democracy, and it is a country of great progress.

It is a country of great opportunity and possibility, and it is a country of great achievement.

It is a country of great beauty and wonder, and it is a country of great glory.

It is a country of great strength and resilience, and it is a country of great courage.

It is a country of great compassion and kindness, and it is a country of great love.

It is a country of great faith and belief, and it is a country of great hope.

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TABLE SHOWING CAPITAL EMPLOYED  
IN CUBAN SUGAR INDUSTRY CONTROLLED  
BY AMERICANS

CUBA -- "In his brief submitted to the Senate Committee on Finance in 1922, Henry A. Rubino, representing the American sugar interests in Cuba, included the following estimate:<sup>1</sup>

Sugar mills and estates owned by Americans . . . . .	\$ 621,219,766
Sugar estates controlled by Americans by reason of their being financed by Americans . . . . .	125,000,000
American investments in Cuba dependent entirely upon the sugar business . . . . .	156,250,000
Amounts due Americans for machinery, merchandise, and supplies, secured in part by equipment trusts, etc. . . . .	128,600,000
<hr/>	
Total . . . . .	<u><u>\$1,031,069,766</u></u>

Mr. Rubino's estimate includes both plantation and factory investment, between which, so far as tariff questions are concerned, a distinction may be drawn. Moreover, he includes, in his Cuban total of \$1,031,069,766, investments by Americans who are more or less directly associated with the sugar industry in Cuba but who are not direct owners. Undoubtedly many such investments are associated with the domestic industry, perhaps relatively as many and as great in the Cuban industry. The magnitude of such investments, however, is unknown, and hence they will not be included in the comparison made in this study. The first two items, amounting to \$746,219,766, may be fairly used in the comparison as representing direct investment of American capital in Cuba."

<sup>1</sup> Rubino, H. A., *ibid.*





responsible for 84% of the increased production to meet the sugar crisis brought on by the war. Additional capital from the United States at that time made possible the erection of some factories and the enlargement of others. The result was an increase in the output of American owned mills of 1,540,154 tons during the war period, as compared with an increase of 241,292 tons for other Cuban factories. By 1924 American owned mills were producing 61.9% of the sugar produced in Cuba as compared with 53% in 1921, which shows that the influence of American capital in Cuba is increasing. The 76 factories now owned by Americans produced an average of 36,863 tons each in the season 1923-24, as compared with an average of 16,500 tons each for all other factories.\*

The influence of American capital is greater in the newly developed sections of the island as was indicated earlier by the fact that the largest factories are located in the two eastern Provinces of Camaguey and Oriente. Of the 76 American owned factories 44 are located in these two Provinces alone, indicating that a great deal of American capital has found its way to Cuba in recent years. Costs of Production are lower in the eastern section, also due in part to the larger scale operations and greater use of capital, and to the fact that the cane land has not produced for as long a time in this section.

STABILIZED GOVERNMENT. - In the discussion in the first two chapters, many instances were pointed out in which the production of sugar in Cuba was retarded because of unfavorable political conditions in the island. As a matter of fact, political instability was very largely responsible for the failure of Cuba to retain or increase her importance as a sugar producer from 1870 to the end of the nineteenth century. It is true that a shortage

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of labor at that time increased production costs, but had it not been for the insecurity of life and property in the island more capital would have found its way to Cuba to offset the labor shortage.

The benefit to Cuban sugar industry of a stabilized government can be brought out very clearly when we compare the trade of the United States with Cuba and that of the United States with Mexico. In 1911 the trade of the United States with the two countries was substantially the same. During the ten years from 1911 to 1921 the trade of the United States with Cuba increased from about \$150,000,000 to over \$1,200,000,000 while that with Mexico increased from \$120,000,000 to about \$400,000,000.

In 1896-97 Cuba was facing starvation. Her sugar production amounted to only 212,051 tons. At that time her climate was just as good, the soil was even more fertile than now, the rainfall and sunshine were just as plentiful, her geographical position was the same as now, and the demand of the people of the United States for sugar was almost as large as now, but Cuba could not produce because political instability made production hazardous and prevented much needed capital from coming in. Since 1898 life and property have been protected and a stable government under which to work and produce has been guaranteed by the United States Government, and Cuban production has advanced by leaps and bounds until her sugar crop alone for the season 1925-26 will, according to the estimate on Dec. 9, 1925 of Guma and Mejer, amount to 5,373,714 tons. This increase in sugar production of 2500 per cent in 29 years was made possible largely because of the political stability of the Cuban Government since gaining her independence from Spain.



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THE UNITED STATES MARKET FOR SUGAR. - One of the most important factors in the Cuban sugar situation at present is the market for sugar in the United States. With a population of over 110,000,000 and a per capita consumption of sugar of over 100 pounds per year, the United States constitutes the biggest sugar market in the world. For several years this market has used over 11,000,000,000 pounds of sugar annually. Cuba is located at the threshold of this great sugar market and trade with the United States naturally follows. Cuba is so favorably situated geographically that she could supply single handed the sugar needs of the people of the United States at a unit cost not exceeding very materially the present unit cost. Sugar production is an agricultural enterprise and is subject to the law of diminishing returns, but in Cuba the law would operate very slowly until a considerable expansion in the industry had taken place. The demand for Cuban sugar should, therefore, receive the most consideration. The United States has long been the leading user of Cuban sugar as the following table shows:

PER CENT OF UNITED STATES SUGAR CONSUMPTION SUPPLIED BY CUBA.

1866	73.0	1900	19.7
1870	52.7	1910	46.2
1880	48.0	1920	46.7
1890	36.9	1923	57.4

Yearbook of the Department of Agriculture.

In selling her sugar in the United States market, Cuba has to compete with other sources of supply available to the United States. In this competition Cuba was for a long time on equality with all other producers foreign to the United States. During this time also the producers in continental United States had great difficulty in lowering costs



enough to compete with foreign sugar in spite of a very high tariff to protect them. Finally, however, due to the continued protection of the tariff and to unfavorable conditions in Cuba, the producers in the Continental United States were able to become established so as to be able to compete in the sugar market. The tariff protection spoken of above has been granted continuously from 1789 to the present. Even when sugar was admitted free under the Act of 1890, the continental producers were protected by a bounty, which incidentally benefited the consumer at the expense of the government. Furthermore, in 1876 the sugar industry of Hawaii was stimulated by the reciprocity treaty, and has ever since enjoyed <sup>free trade</sup> ~~protection~~ as compared with Cuba. Two additional sources of supply have since been granted <sup>tariff exemption</sup> ~~protection~~ or preference as compared with Cuba. Porto Rico and the Philippine Islands became insular possessions following the Spanish American War, and were given tariff preference. The United States market has, for over twenty-five years, been supplied with sugar from sources that can be classified into three groups as regards tariff preference, namely, domestic, Cuban, and other foreign. The domestic source include the insular possessions of the United States as well as continental United States. The following table gives a history of the importance of these three sources of sugar supply of the United States as well as the growing importance of the United States as a sugar consumer:





PERCENTAGE OF UNITED STATES SUGAR SUPPLY FURNISHED  
BY VARIOUS SOURCES

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Year	Total Domestic	Cuba	Other Foreign
1890	31.40	30.01	38.59
1895	28.43	41.66	29.91
1900	25.93	15.23	58.84
1905	41.50	41.85	16.65
1910	48.88	48.96	2.16
1915	51.02	48.43	.55
1920	34.20	52.24	13.56
1923	42.01	55.39	2.60

Sugar In Relation to the Tariff - P. G. Wright.

It will be seen from this table that the other foreign source of the United States supply of sugar has become of slight importance in recent years, constituting an emergency source of supply only. In discussing the United States sugar market, therefore only two sources of sugar need be considered in detail, the Cuban and the domestic. As has already been pointed out these two competitors for the United States sugar market each furnish nearly a half of the sugar consumed in the United States, and the two shares in that market are suprisingly equal. The other foreign sources of sugar lost out because of the tariff, the final blow coming when the reciprocity agreement with Cuba went into effect in 1903, giving her a 20% reduction in the tariff as compared with other foreign competitors.

Since the other foreign source of sugar supply has dwindled to insignificance, chief interest centers on the competition between Cuban and domestic producers. In this competition Cuba is handicapped by a high tariff which protects the domestic producers. The tariff on imports of sugar from Cuba is shown by the following table:



IMPORT DUTY ON 96° CENTRIFUGALS IN CENTS PER POUND

Year	Full Duty	Cuban Duty
1897	1.685	1.685
1903	1.685	1.3480
1914	1.256	1.0048
1921	2.000	1.6000
1922	2.206	1.7648

Year Book of the Department of Agriculture 1923.

If this tariff protection were removed it is highly probable that the domestic industry would be reduced drastically and the Cuban industry would be correspondingly increased.

The following tables adapted from the United States Tariff Information Series 9 and 16, and Wright's book on "Sugar in Relation to the Tariff", give some idea of the costs of production in the Cuban and the domestic sources.

COST OF PRODUCTION IN THE SUGAR INDUSTRY

Average 1909 to 1914	1913-14 Cuba	1913-14 Hawaii	1913-14 Porto Rico	1911-12 Louisiana	U. S. Beet
Cost Cane or Beet	1.010	1.7840	2.0510	3.3455	2.5085
Fact. Cost	.4655	.4315	.6365	1.1760	1.4135
	1.4755	2.2155	2.6875	4.5215	3.9220
Less By-Prod.	.0375	.0095	.0730	.1815	.175
Net F. O.B. Mill	1.4380	2.2060	2.6145	4.3400	3.7470
Marketing	.2625	.6920	.2135	.1405	.3785
	1.7005	2.8980	2.8280	4.4805	4.1255
Duty 96°	1.3480				
Net- N. Y.	3.0485	2.8980	2.8280	4.4804	4.1255
U.S. Refining	.720	.720	.7200	.7200	
Net - Refined	3.7685	3.6180	3.5480	5.2004	4.1255





# COSTS OF PRODUCTION IN THE SUGAR INDUSTRY

1921-22	Cuba	Hawaii	Proto Rico	Louisiana	U.S. Beet
Cost-Cane or Beet	1.8035	2.6151	3.2265	3.0117	3.1247
Fact. Cost	1.2861	1.5780	1.3085	1.7599	2.3924
	3.0896	4.1931	4.5350	4.7716	5.5171
Less By-Prod.	.0287	.0169	.0741	.3593	.2088
Net-F.O.B. Mill	3.0609	4.1762	4.4609	4.4123	5.3083
Marketing	.3197	.5632	.3188	.1382	.9668
	3.3806	4.7304	4.7797	4.5505	6.2751
Duty 96°	1.7648				
Net - N.Y.	5.1454	4.7394	4.7797		
U. S. Refining	1.1331	1.1331	1.1331	1.1331	
Net-Refined	6.2785	5.8725	5.9128	5.6836	6.2751

These tables show conclusively that the expansion of the Cuban industry is held in check by the protective tariff on sugar entering the United States.

While a change in the tariff affects the relations of the various producers, it is not necessary for the tariff to change in order to bring about the effects of a change in the tariff. The tariff is levied in accordance with the quantity of sugar imported and not the value. Since the tariff is a fixed item of cost its effect on the supply of sugar from the various sources changes with price changes. For instance, the tariff was 1.0048 cents per pound on sugar of the grade ordinarily exported by Cuba to the United States from 1914 to 1921, but for the season 1916-17 it comprised 26 per cent of the cost of Cuban sugar at New York and for 1917-18 only 20%.

## INTERDEPENDENCE OF FACTORS IN RELATION OF UNITED STATES AND CUBA. -

The factors involved in the Relation of the United States to Cuba cannot be separated and the effect of each on the Cuban sugar industry determined.



Capital from the United States did not venture freely into Cuba until political stability was assured, and the fact that the United States is interested in Cuba politically and financially affects her tariff policy. Furthermore, American ships give Cuba an easy outlet for her sugar and has a bearing on the marketing relations existing. The proximity of Cuba to the United States no doubt exercises a powerful influence on all of those factors and tends to make them interdependent.





### CONCLUSION

Sugar recently has been receiving increasing attention by the public, because of its growing importance in their diet, and because of the tremendous price fluctuations caused by the interaction of supply and demand. The demand for sugar is somewhat inelastic, but the supply of it is apt to fluctuate considerably as in any other agricultural industry. Since Cuba is one of the chief sources of supply for the United States, it has had a large share of attention in the investigations made by the Federal Trade Commission and the Tariff Commission as well as in the propaganda circulated by the press.

The rise of Cuba to importance as a sugar producer has been greatly accelerated during the last ten years. As early as 1800 Cuba produced  $\frac{5}{100}$  of the world's supply of sugar. From that time on her importance increased until 1870, when she produced about one third of the world total. This large proportion of the world's production, however, is in large part due to the fact that much of the sugar produced for home consumption was not included in the world total. Abolition of slavery caused her to lose in importance and her proportion was never more than  $\frac{14}{100}$  until the world war started. For the last five years Cuba has produced on the average  $\frac{22}{100}$  of the sugar consumed. The importance of Cuba as a producer of sugar for international trade is even more impressive. At present, Cuba produces almost  $\frac{2}{3}$  of all the sugar entering international trade. The percentages just given to show the recent growth of the Cuban sugar industry do not tell the whole story. It must be remembered that the world total is now over 20,000,000 tons as compared with 10,000,000 in 1900 and 2,500,000 in 1870. (Again, this <sup>last</sup> figure probably does not include India and other countries producing cane sugar for home consumption.) The ability

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The Commission on the Sugar Industry, established in 1928,

has been studying the sugar industry in the United States and

the world since its establishment. It has been caused by the

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large part due to the fact that much of the sugar produced for home con-

sumption is produced in the world total. Abolition of slavery caused

the sugar industry in the United States and her production was never more than 10% of the

world supply of sugar. For the last five years Cuba has produced on the

average 20% of the world's supply. The importance of Cuba as a producer

of sugar is even more impressive. At present,

the United States consumes 20% of all the sugar produced in the world.

The Commission has been studying the sugar industry in the United States and

the world since its establishment. It has been caused by the

supply of sugar is somewhat inelastic, but the supply of it

is not so inelastic as in any other agricultural industry.

The Commission has been studying the supply of sugar for the United States,

and has had a large share of attention in the investigations made by the

of Cuba to meet the world sugar situation arising out of the war by increasing her yearly average production 100% or by 2,258,000 tons in less than ten years indicates her potential producing capacity and marks her as the most important source of sugar.

The factors explaining the importance of Cuba as a source of sugar have been grouped under five heads, (1) Favorable Geographic Factors, (2) A Short Haul to Market, (3) Labor and Population, (4) Capital and Science, and (5) The United States in its Relation to Cuba. The sugar industry, like all agricultural industries, depends <sup>to</sup> a great <sup>extent</sup> ~~deal~~ on favorable geographic conditions. <sup>It has already been indicated</sup> How favorable these conditions are for the production of sugar in Cuba, ~~has been pointed out~~ With a land area of over 41,000 square miles that has been largely reduced to low fertile plains of black and red residual clay loams, over 32,000 square miles of which is actual or potential sugar land, Cuba is in position to produce more sugar than the world needs for many years to come. Ideal growing conditions are furnished by a hot, rainy season followed by a dry season. Absence of frost permits the cane to grow continuously and produce many years in succession without replanting. Throughout the history of the island, growing conditions have seldom been poor, an occasional hurricane or drought being the only serious exceptions.

Cuba's short haul to market began to be a factor as soon as the United States became an important sugar consumer. The narrowness of the island makes it impossible to locate plantations far from the coast and an abundance of well distributed harbors lowers internal transportation costs to a minimum. Because the north coast is nearer the United States, the ports on that side of the island handle most of the sugar exports. The





geographical relation of Cuba to the United States early brought about good transportation service to Atlantic ports and enabled Cuban producers to compete with the bounty fed European beet sugar industry while other cane sugar centers not so favorably located suffered from the loss of their markets. Cuba still has the cheapest haul to the United States market of all producing centers except Louisiana.

One of the earliest disturbing factors in the Cuban sugar industry and at the same time the factor that contributed most to its early growth was the supply of labor. The westward spread of the cane sugar industry and its eventual concentration in Cuba was hastened by the supply of negro slaves obtainable. The unprecedented growth of Cuba's sugar industry during the first part of the 19th century was due to the fact that slavery existed there long after it was abolished in other islands and its decline after 1870 was due to labor shortage caused by the abolition of slavery. The increasing proportion of whites to negroes and the importation of labor from Spain and other European countries has permitted the use of an increasing amount of capital equipment in Cuba and will be an important factor in the final solution of her labor problem.

By far the most important factor in the development and present status of the Cuban sugar industry is its dependence upon the United States. As pointed out in the main part of this report, this dependence is fourfold. The United States not only furnishes capital, guarantees political stability, and acts as a market for sugar, but also competes in the production of sugar. The interest that the United States has in Cuba is not of recent origin, but began during the colonial period. The hope that Cuba might even become a possession of this country was entertained early in the 19th century. President John Quincy Adams had the following to say in 1823:\*





"There are laws of political, as well as of physical gravitation; and if an apple, severed by the tempest from its natural tree, cannot choose but fall to the ground, Cuba forcibly disjoined from its own unnatural connection with Spain, and incapable of self-support, can gravitate only towards the North American Union, which, by the same law of nature, cannot cast her off from its bosom."\*

Although very much interested in the affairs of Cuba, it was not until after the "Ten Year's War" that the United States made any considerable investment of capital in the sugar industry there. The investment of ~~Exec. Document No. 121, page 7, 32nd Congress, 1st session,~~ ~~House of Representatives~~ from thirty to fifty million dollars in machinery, railroads and plantations from 1879 to 1896, and the investment of fifteen million dollars in the anticipated sugar crop of 1896 had a great deal to do with the attitude of the United States toward Cuba at the time of the war with Spain. Following the war with Spain Cuba could not have recovered her sugar market except for the investment of capital by Americans. As already shown, the replacement of antiquated and damaged factories by modern ones twenty times as large has lowered costs, conserved labor and increased production to an extent never dreamed of by the pre-war producers. This<sup>t</sup> tremendous increase in capital equipment, amounting to nearly \$1,000,000,000 in twenty years, is perhaps the main reason for Cuba's ability to double her production during the world war period for it enabled producers to get the maximum of cane crushed during the dry period, which varies in length from year to year.

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\*Exec. Document No. 121, page 7, 32nd Congress, 1st session, House of Representatives.



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The effect of the United States policy of intervention in Cuba's political affairs is also of outstanding importance. Perhaps most of the capital investment has been made because political stability in Cuba is at last an assured fact. At any rate production of sugar has often been interfered with by political uprisings and capital investment was discouraged by the insecurity of life and property in Cuba. Throughout its history the sugar industry has prospered during periods of peace, when attention could be turned to peaceful pursuits. The effect then of the assurance of permanent peace in encouraging capital and in enabling undisturbed work cannot be doubted.

An easily accessible, almost unlimited market is the boon of any enterpriser. The natural relation between the United States and Cuba early showed its effect in the trade in sugar. Many references are found in the early history of Cuba to the fact that the growing United States demand for sugar is met by the shipment of most of Cuba's crop. The fact that the earliest reliable data, 1865-70, show that Cuba sold 50% of her total production to the United States, and that the United States obtained from 60% to 75% of her supply from Cuba is convincing proof of the importance of the early relation of these two countries. The further fact that the most recent figures of 1920-25 show about 60% in the first and 60% in the second of the above comparisons, proves that the importance of the relation of these two countries has not diminished. The proportion of sugar entering international trade supplied by Cuba and received by the United States supports the same conclusion.

The close relation between domestic production of sugar and the Cuban market for sugar in the United States is emphasized by the fact that domestic and Cuban producers supply over 98% of the sugar consumed in this



country. Statistics of costs of production have further shown that the tariff acts as a formidable barrier to protect domestic producers against Cuban competition, the present tariff constituting about  $1/3$  of the cost of Cuban sugar in the New York market. The competition of the domestic producers was felt by Cuba during the latter part of the 19th century and has been very keen during the 20th, continuing in spite of the reducing cost of production in Cuba brought about by large scale production. In recent years, however, Cuba has been able to obtain a larger share of the United States market due to the lessening effect of the fixed tariff as prices rise and to the further fact that marginal costs of production in Cuba do not rise as rapidly as in domestic centers of production when the volume of production is pushed up rapidly to meet an increased demand.

It is not enough to consider the rise and present status of an industry. An attempt must also be made to forecast its future, and so this hazardous undertaking will be attempted for the Cuban sugar industry.

The statement that the 5,000,000 tons of sugar now being produced annually in Cuba is reaped from only about 10% of its area is apt to lead to erroneous conclusions regarding the future of the industry. The Spaniards as well as the Americans are keen agriculturists and have no doubt selected the best lands for the production of cane. Furthermore, much of the land now in use has been cultivated year after year without renewing the plant food taken from the fields, and fertilizers will have to be used. In addition to this new lands suitable for the cultivation of sugar cane are not any longer plentiful in Cuba and it is in the most inaccessible places and will not yield





as abundantly or for so long a period as that already used. The possibility of increasing the yield of cane per acre and the yield of sugar per ton by introducing improved varieties of cane is not so great in Cuba as in other producing centers. The Cuban planter is not anxious to experiment with new varieties of cane because he expects one planting to last eight to twelve years and should a new variety fail he would be out considerably, but there is a possibility that extensive experiments along this line in Cuba might eventually convince the planter that a new variety of cane would grow and would produce more abundantly. Improvements in agricultural methods of the above nature as well as in the methods of cutting and handling cane seem to offer the greatest future possibilities in Cuba. The labor situation is not the obstacle to increased production that it has been in the past, and there is no reason why the increasing immigration of dependable laborers will not take care of future needs. As far as additional capital investment is concerned the future is not as bright as the past. It is not likely that Cuba can lower costs of production in the future as greatly as in the past by the investment of additional capital equipment, although there is still much opportunity to introduce labor saving devices. A satisfactory cane cutting, stripping and topping machine would be a great aid in reducing costs and in speeding up production, and there is a possibility that one will eventually be developed. While the owners of the capital equipment now in Cuba have reaped profits that more than paid for it, it is probable that in normal times additional equipment would not be so productive. There is no reason to doubt that political stability will continue and this fact will be conducive to increased production. Much also depends upon the climatic conditions in Cuba and upon the tariff protected domestic



sugar industry. The supply of any agricultural commodity is not stable, and sugar is no exception. The progress made by the domestic industry also affects the demand for Cuban sugar and the future tariff policy of the United States will largely determine the future prosperity of domestic producers.

Although, the effect of the tariff has been reduced somewhat following the war due to a <sup>rise</sup>~~fall~~ in prices, This advantage to Cuban producers is at present being lessened. Production of sugar in Cuba will in all probability continue to increase, but any expansion to equal that of the last ten years is not to be expected under normal conditions, and Cuba's importance may even decline for a time, due to the recovery of other producers, and to the fact that steps are not at present being taken to lower production costs in Cuba, but instead there is being formulated a plan to limit production.





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THE FOLLOWING PAGES CONTAIN PROGRESS  
WORK AND DATA IN GREATER DETAIL  
THAN THAT CONTAINED IN THE  
BODY OF THE REPORT.



1923-1924

133,983 Long Tons

10.29% Increase

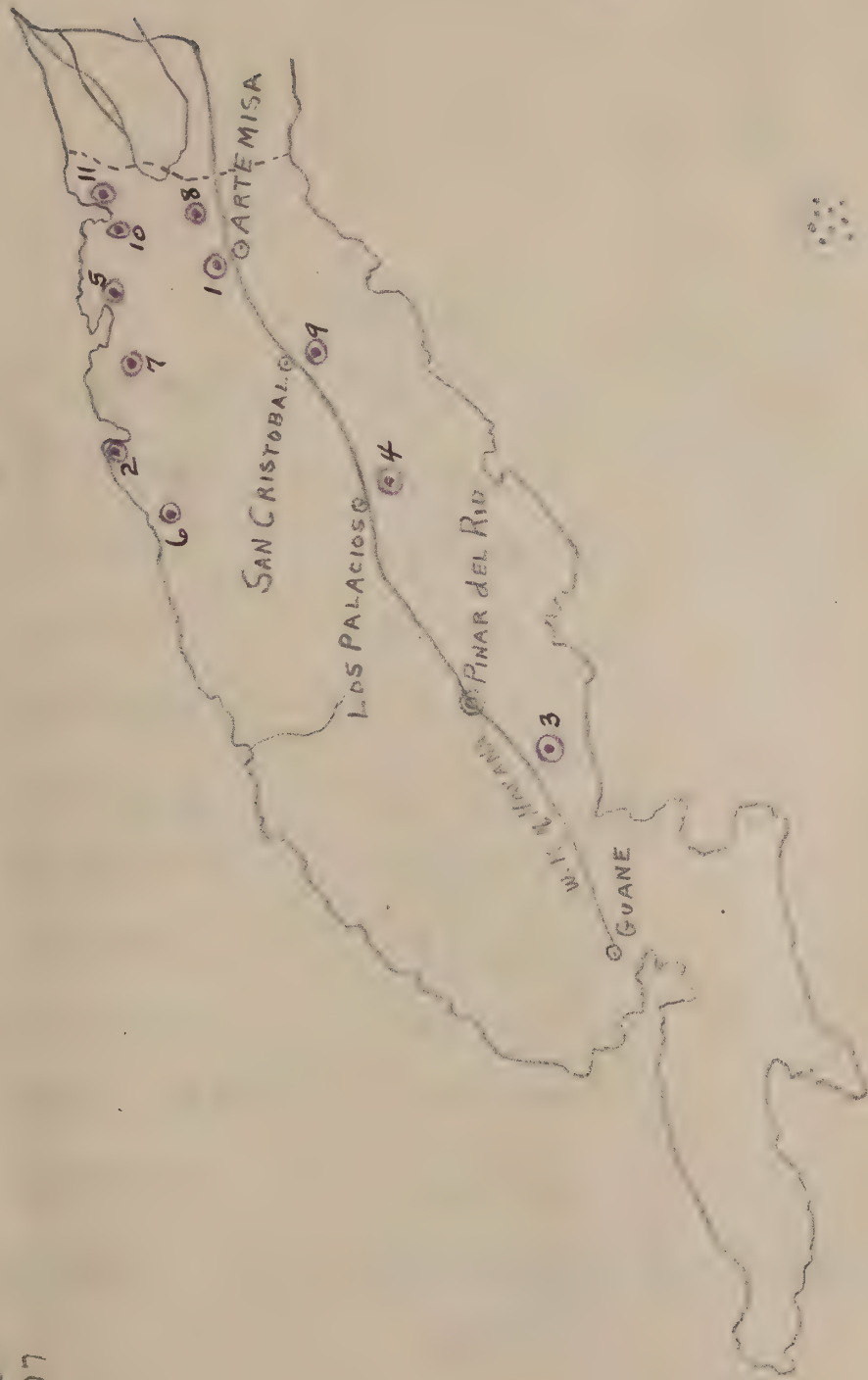
123

5.11

6.50

5.77

PINAR DEL RIO



CENTRALS



324.76 lb.

<u>Central</u>	<u>Sacks Produced</u>	<u>Capacity</u>	<u>Owner</u>
1. Andorra	94,187		
2. Bahía Honda	30,548		
3. El Pilar	191,829		
4. Galope	67,286		
5. La Francia	56,103		
6. Mercedita	122,686		
7. Mercedes	1,410		
8. Niágara	62,600		
9. Orozco	85,950		
10. San Cristóbal	104,001		
11. San Ramón	107,516		
	<hr/> 924,116		

336,101 LONG TONS

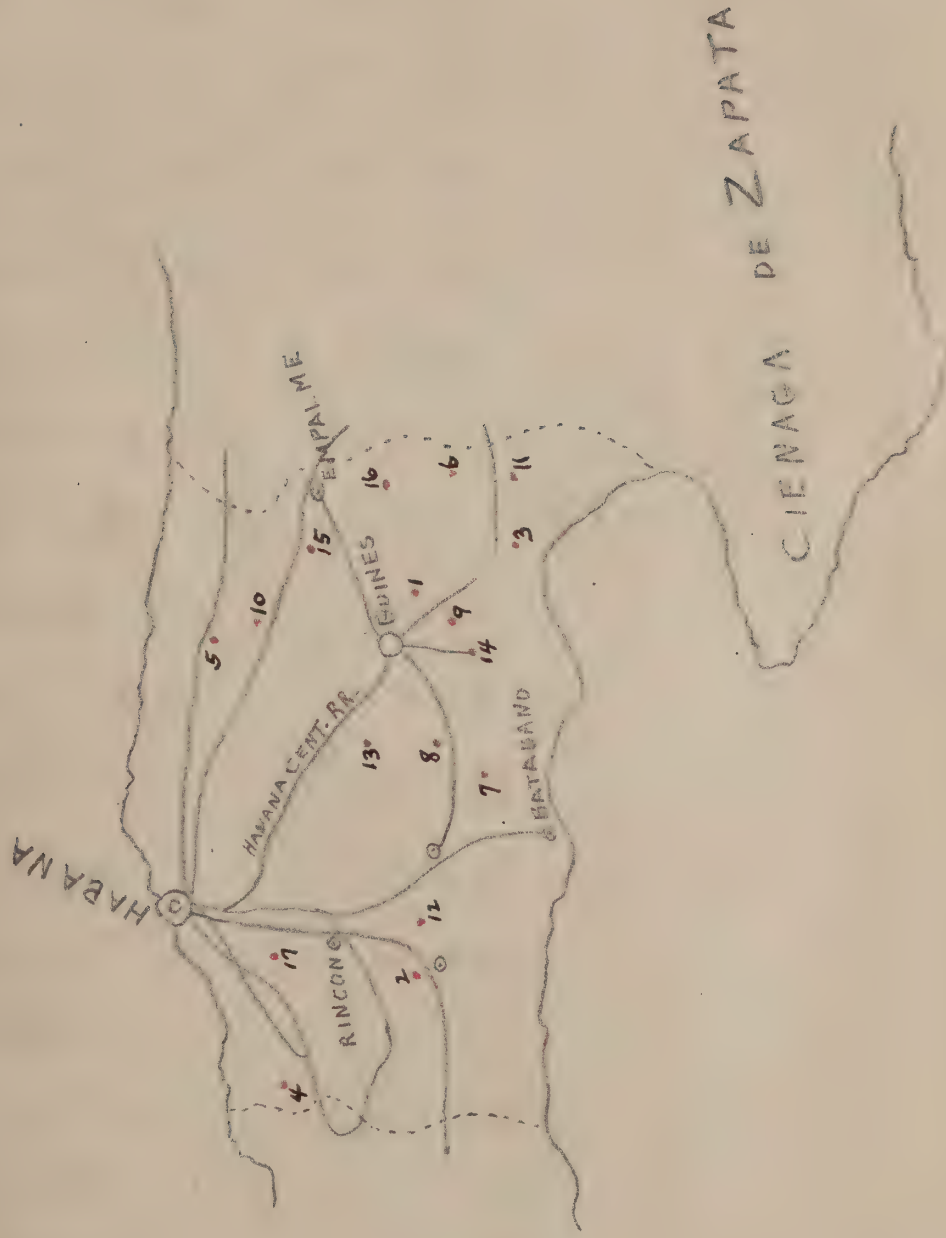
29.92% increase over 1922-23

16.54

26.60

5.89

17.15



		325.83 lb		
<u>Central</u>		<u>Sacks</u>	<u>Capacity</u>	<u>Owner</u>
1	Amistad	161,652		
2	Fajardo	16,298		
3	Jómezz Mena	286,599		
4	Habana	91,420		
5	Hershey	159,805		
6	Josefita	85,030		
7	La Julia	179,253		
8	Mercedita	108,401		
9	Nombre de Dios	60,731		
10	Ntra. <del>Sra.</del> del Carmen	115,871		
11	Nueva Paz	37,620		
12	Occidente	43,319		
13	Portugalete	83,424		
14	Providencia	214,100		
15	Rosario	163,194		
16	San Antonio	172,976 <sup>mg</sup>		
17	Toledo	330,877		
		<hr/>		
		2.310.570		

500,252 long tons

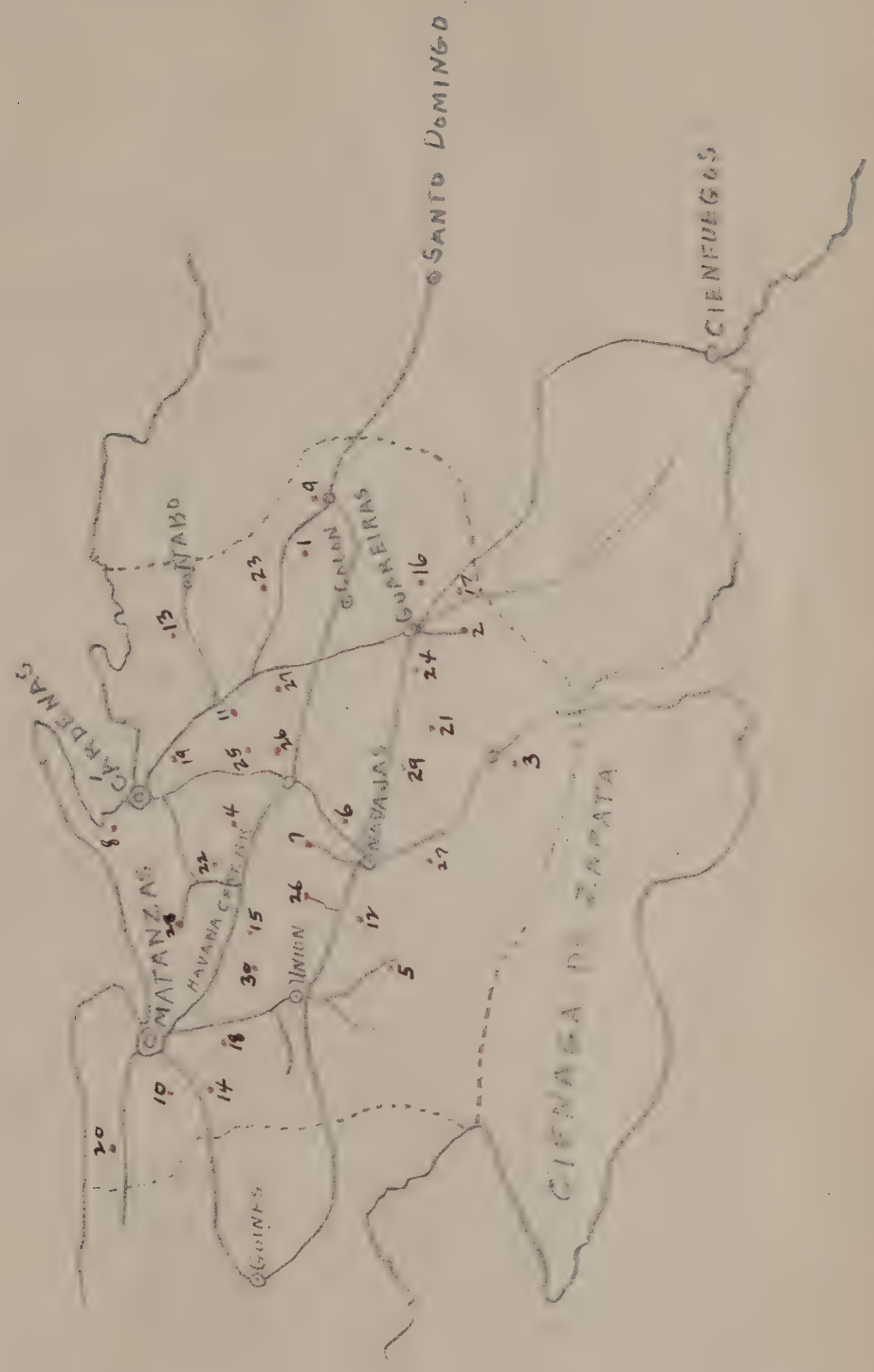
13.56% increase over 1922-23

12.33

30.69

14.49

14.78



Bibliography 4



323.47 lb.

<u>Central</u>	<u>Sacks</u>	<u>Capacity</u>	<u>Owner</u>
1. Alava	270.997	320	
2. Araujo	122.284	150	
3. Australia	48.490	160	
4. Carolina	96.772	120	
5. Conchita	247.225	300	
6. Cuba	184.555	200	
7. Dolores	43.359	70	
8. Dos Rosas	63.467	100	
9. Dulce Nombre	36.811	100	
10. Elena	14.107	50	
11. España	402.414	500	
12. Flora	83.512	100	
13. Guipúzcoa	162.000	200	
14. Jesús Maria	106.160	100	
15. Limones			
16. Mercedes	285.775	400	
17. Por Fuerza	148.334	200	
18. Porvenir	10.737	50	
19. Progreso	47.113	100	
20. Puerto	32.700	50	
21. San Ignacio	74.754	100	
22. Santa Amalia	104.893	70	
23. Santa Gertrudis	154.675	200	
24. Santa Rita	93.486	125	
25. San Vicente	54.926	100	
26. Soledad	166.076	170	
27. Tinguaro	224.851	250	
28. Triunfo	78.010	70	
29. Unión	39.604	50	
30. Santo Domingo	66.102	80	
<hr/> 3.464.189			

840,844 LONG TONS

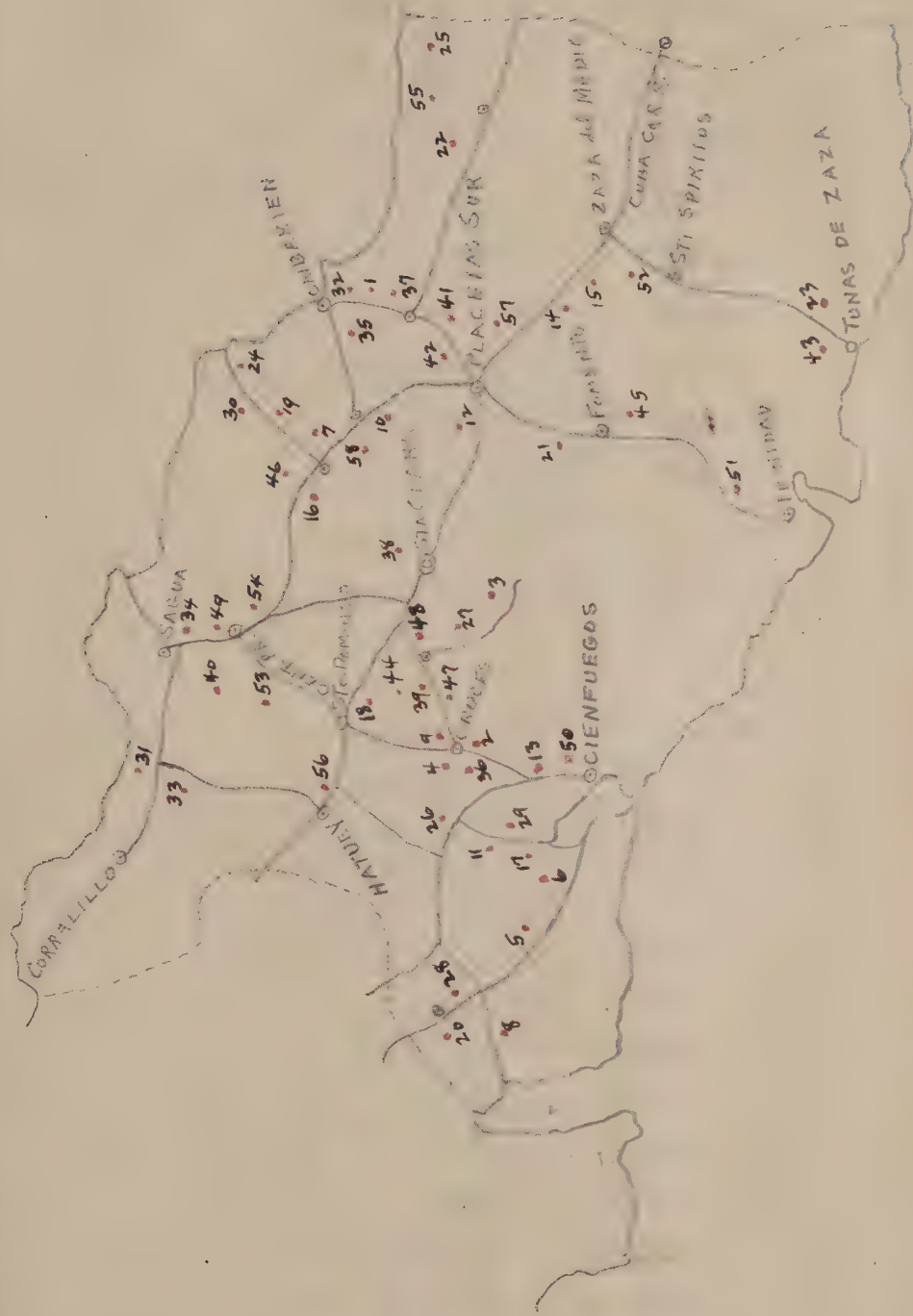
20.63% increase on 1922-23

11.85

13.00

1.54

3.16



Bibliography 4

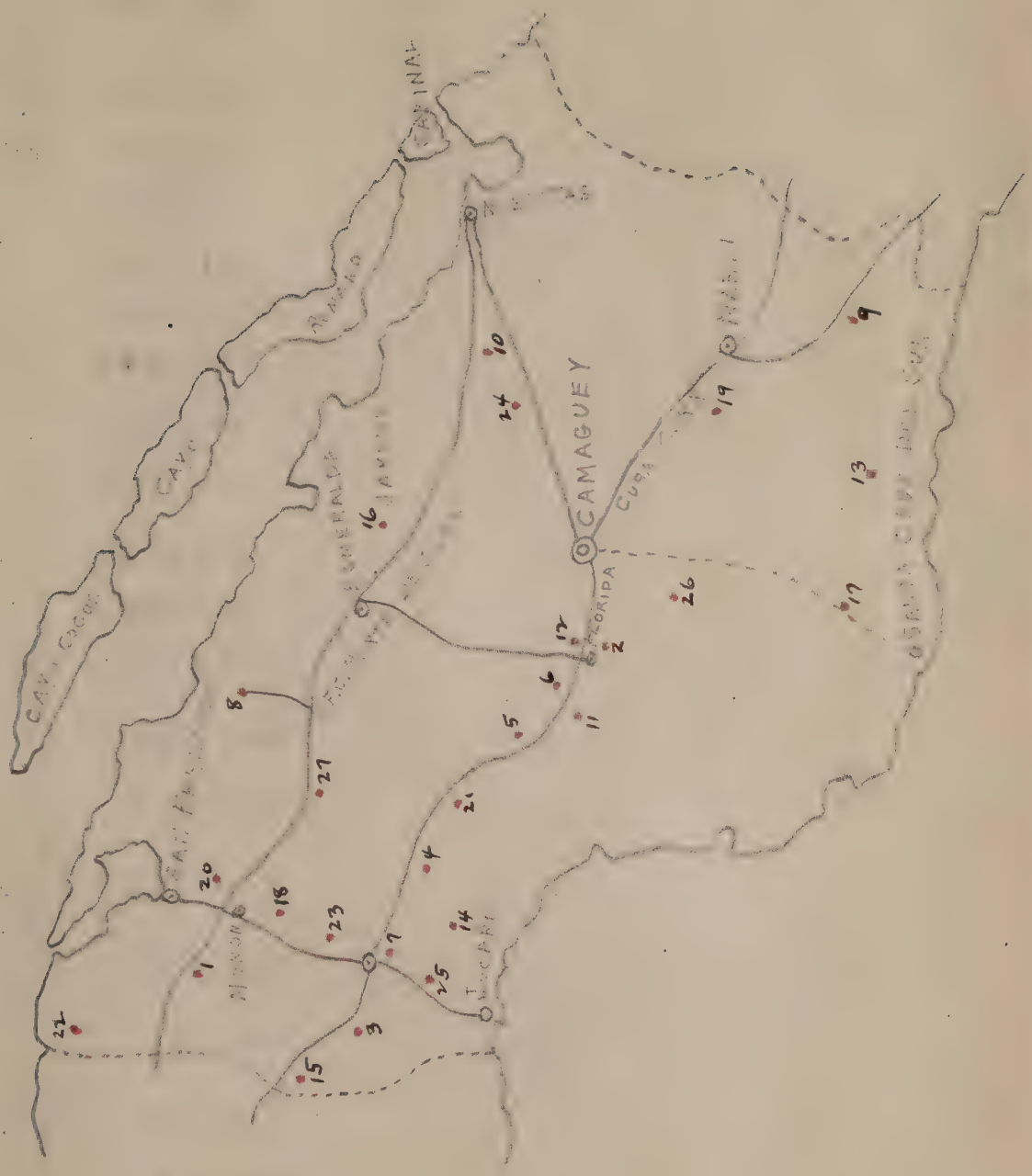
<u>central</u>	<u>324<sup>31</sup> lb. Sacks</u>	<u>Capacity</u>	<u>Owner</u>
dela	96.733	150	
ndreita	169.221	200	
gabana	31.010	75	
aracas	313.333	300	
mita	47.108	15	
idoso	53.129	100	
enequita	66.617	90	
ustancia	127.197	250	
ustancia	132.465	200	
adonga	158.672	225	
oz Hermanas	81.019	125	
e	124.458	250	
errer	70.021	150	
idencia	76.759	125	
ormiguero	236.880	280	
esús Nazareno			
La Vega	118.490	<sup>my St</sup> (125)	

nacagua	55.986	75
manuelita	77.740	100
maría Antonia	29.149	70
maría Luisa	87.916	100
maría Victoria		
igabana		
Narcisa	249.318	300
natividad	29.426	80
Nazabal	173.316	200
Nela	17.606	80
Parque Alto	84.109	100
Pastora	53.000	100
Preservancia	155.720	200
Portugalete	54.454	125
Rurio	89.010	100

<u>Central</u>	<u>324<sup>31</sup> lb. Sacks</u>	<u>Capacity</u>	<u>Owner</u>
31 Ramona	123.238	175	
32 Reforma	114.667	200	
33 Resolución	88.803	120	
34 Resulta	131.264	165	
35 Rosalia	<del>151.420</del>		
36 San Agustín	165.143	150	
37 San Agustín	151.437	150	
38 San Antonio de la Unión	51.371	100	
39 San Francisco	98.696	100	
40 San Isidro	150.091	160	
41 San José	128.550	200	
42 San Pablo			
43 Santa Ana de los Mapos	13.581	120	
44 Santa Catalina	125.726	150	
45 Santa Isabel	110.736	120	
46 Santa Lutgarda	146.177	150	
47 Santa María	128.288	130	
48 Santa Rosa	124.266	150	
49 Santa Teresa	198.280	200	
50 Soledad	114.117	140	
51 Trinidad	84.362	120	
52 Trinité	253.822	300	
53 Ulaia	80.521	140	
54 Unidad	86.418	120	
55 Victoria	171.212	160	
56 Washington	131.412	175	
57 Zaza	127.975	160	
58 Carmita			
		<hr/> 6,153.015	

1922-23      "      "      1924-22

14.81  
14.30  
1.80  
4.85



Bibliography 4



<u>Central</u>	<u>323.35 lb. Sacks</u>	<u>Capacity</u>	<u>Owner</u>
1 Adelaida	282.385	285.465	
2 Agramonte	320.049	400	
3 Algodones	218.672	225	
4 Baraguá	481.327	500	
5 Camaguey	114.220	150	
6 Céspedes	271.454	300	
7 Ciego de Avila	129.554	130	
8 Cunaagua	555.260	600	
9 Elia	362.949	400	
10 El Lugareño	278.410	400	
11 Estrella	234.681	300	
12 Florida	292.232	300	
13 Francisco	339.600	450	
14 Jagüeyal	304.697	400	
15 Jatibonico	427.015	425	
16 Jaruquí	471.072	600	
17 Macareño	130.389	150	
18 Morón	744.179	750	
19 Majasa	140.860	160	
20 Patria	140.563	145	
21 Rilar	114.567	150	
22 Punta Alegre	409.989	425	
23 Santo Tomás	304.001		
24 Senado		350	
25 Stewart	387.335	500	
26 Vertientes	242.284	280	
27 Violeta	508.949	525	
	<u>8.206.693</u>		

1.066.841 long una

9.20% increase over 1922-23

25.75

31.66

4.48

15.46



Bibliography

<u>Central</u>	323.73 lb. <u>Sacks</u>	<u>Capacity</u>	<u>Owner</u>	<u>Central</u>	323.73 lb. <u>Sacks</u>	<u>Capacity</u>	<u>Owner</u>
Almeida	177.003	177		35 Santa			
Alto Cedro	222.708	250		Cecilia	42.526	100	
América	191.613	190		36 Santa			
Báguanos	178.019	200		Lucia	181.222	300	
Borjita	76.919	80					
Boston	276.020	680		37 Sofia	37.286	50	
Cacocum	41.201	90		38 Soledad	93.201	100	
Cape Cruz	80.452	150		39 Jacajó	142.336	200	
Cupsey	144.434	200		40 Jaramo	171.491	300	
Chaparra C	500.421	700		41 Teresa	57.871	150	
Chaparra D	763.851	1000		42 Unión	66.825	100	
Dos Amigos	59.073	75		43 Pennsylvania	2.721		
Ermita	140.912	200					
Esperanza	83.097	250					
Itatillo	106.360	150					
Isabel	204.005	250					
Jotabo	381.074	400					
Los Caños	104.492	150					
Mabag	93.411	100					
Morro	38.610	150					
Manati	540.526	1000					
Miranda	370.425	500					
Niguero	208.491	300					
Oriente	164.171	150					
Palma	304.823	300					
Presidente	63.855	120					
Roston	475.782	600					
Rio Canto	181.703	250					
Romelie	48.023	100					
Salvador	84.116	80					
San Antonio	55.740	90					
San Germán	120.324	200					
San Ramon	13.113	150					
Santa Ana	91.591	150					

7.381.837

3345

1445



MCKINLEY'S DESK OUTLINE MAPS. NO. 81a. THE WORLD. (MERCATOR'S PROJECTION; COAST LINES ONLY.)





# MCKINLEY'S DESK OUTLINE MAPS. NO. 81a. THE WORLD. (MERCATOR'S PROJECTION; COAST LINES ONLY.)



Subject	World Trade In Sugar
Date	
Explanation	1909-1913

0 1000 2000 3000 4000  
Scale along the Equator



















3 1198 05512 3512



N/1198/05512/3512X

378.748

POA1926.13

Nelson

Hist.& present status of the

378.748

POA1926.13



3 1198 05512 3512



N/1198/05512/3512X

ST